

DOCTOR OF PHILOSOPHY

Modelling the current state and potential use of knowledge management in higher education institutions

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MODELLING THE CURRENT STATE AND POTENTIAL USE OF KNOWLEDGE MANAGEMENT IN HIGHER EDUCATION INSTITUTIONS

Main Thesis

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PhD

2004

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ABSTRACT

This research explores the development of a framework appropriate to evaluate the readiness of a university to engage with knowledge management. Many universities are evolving from traditional bureaucratic, hierarchical structures to become more flexible, adaptable, commercially viable and competitive and knowledge management is becoming increasingly important in this respect.

An over view of knowledge management clarifies what the concept is, and a critical review of current frameworks and models identifies gaps and weaknesses specifically in relation to empirical testing, theoretical underpinning and a holistic approach. This framework addresses those gaps and weaknesses and draws on organisational management, strategy, structure and culture, and systems thinking to ensure a holistic approach. These key elements provide the basis upon which a knowledge management framework is developed.

A Soft Systems Methodological approach with a critical dimension is used to underpin this research because enquiry into organisational problem situations is complex and unstructured, based on human activity and social systems. The framework is innovative and offers contributions to knowledge because it:

- is a new development within the domain of knowledge management. (it is intended to help evaluate the readiness of universities to engage in knowledge management);
- provides a new application of critical systems thinking (critical systems thinking is applied to knowledge management);
- uses a new synthesis (it was developed using a synthesis of soft systems principles, knowledge management concepts, and organisational theory);
- enables organisations to consider their situations in new ways (by enabling self-critique of KM readiness);
- offers new insights into the domain of knowledge management by means of the comprehensive and substantial literature review that helped its development.

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1. BACKGROUND

1.1 Introduction

It will be argued in this thesis that knowledge management is now of major interest to organisations in market economies. This is not least because as the private service sector has increased, knowledge has been increasingly recognised as a prime asset. This recognition has extended elsewhere, to include manufacturing, the public sector, and other organisations such as universities.

The term 'knowledge management' is relatively new in the ways it is now being used. It is meant within this thesis to refer to organisational knowledge as opposed to knowledge held solely by individuals. As will be discussed, organisational knowledge may take different forms, and the literature indicates that knowledge management has various approaches and definitions according to the perspective and discipline of the individual or organisation that engages with the concept. Domains of interest include management, individual and organisational learning, communications, information systems and technology, artificial intelligence, and intellectual assets amongst others. Each discipline approaches knowledge management with a different perception. For example, computing domains tend to focus heavily on technology, human resources take an individual and organisational learning approach emphasising learning and reward factors, and others may focus on intellectual assets and the explicit capture and registration of knowledge.

It is apparent that there is no single unifying definition or approach to knowledge management, and "relatively few articles are based on rigorous research, and most KM practice is not well informed by practice" (Edwards et al, 2003). There may, however, be some principles and content that can encompass the whole. For example, knowledge management involves people, processes, activities, technology and the broader environment that enables the identification, creation, communication, sharing, and use of organisational and individual knowledge. Despite this, without some idea from the beginning of what is meant by knowledge management in the context of this thesis, it would make reading difficult and possibly incomprehensible. However, a dilemma exists

in that the definition that will be proposed emerged from research, and it should be recognised that it is only stated here for ease of reading, and not because it was a predetermined view. With this in mind, the following working definition of knowledge management was been derived from theory, practice and reasoning.

Knowledge management refers to the systematic organisation, planning, scheduling, monitoring, and deployment of people, processes, technology, and environment, with appropriate targets and feedback mechanisms, under the control of a public or private sector concern, and undertaken by such a concern, to facilitate explicitly and specifically the creation, retention, sharing, identification, acquisition, utilisation, and measurement of information and new ideas, in order to achieve strategic aims, such as improved competitiveness or improved performance, subject to financial, legal, resource, political, technical, cultural, and societal constraints.

Although this is a complex and possibly hard to penetrate definition, it reflects the dynamism of knowledge management, maintaining the concept at a broad organisational level, and encompassing strategic and operational levels. To reduce the definition to a simpler format would weaken the definition in the context of this research. This may be evident when other 'definitions' of knowledge management are considered:

"The collection of processes that govern the creation, dissemination and utilization of knowledge to fulfill organizational objectives" (Murray and Myers, 1997, p32).

"A combination of management awareness, attitudes and practices, systems, tools and techniques designed to release the power of knowledge" (MacDonald 1999).

"Knowledge management is about

- supporting innovation, the generation of new ideas and the exploitation of the organisation's thinking power;
- capturing insight and experience to make them available and usable when, where and by whom required;

- making it easy to find and re-use sources of know-how and expertise, whether they are recorded in physical form or held in someone's mind;
- fostering collaboration, knowledge sharing, continual learning and improvement;
- improving the quality of decision making and other intelligent tasks;
- understanding the value and contribution of intellectual assets and increasing their worth, effectiveness and exploitation."

KPMG (1999, p2)

Ruggles (1997) recognises that knowledge management processes are not new, but what knowledge management must do is focus an organisation on improving its current actions to exploit the power of knowledge. Ruggles defines knowledge management as the "generation, codification and transfer (of knowledge). The power of knowledge management is in allowing organisations to explicitly enable and enhance the productivity of these activities and to leverage their value for the group as well as for the individual" (Ruggles 1997, p2).

Although the management of knowledge already occurs to a greater or lesser extent in the general business of an organisation, the actual concept of knowledge management and explicit awareness of what it entails is becoming increasingly important to all kinds of organisations, and this importance is growing. This is because, in the last decade, business success and survival have become increasingly difficult to ensure due to an increasing competitive and changing environment. The emphasis is now on adaptability to the business environment and on addressing market and customer needs proactively. Such changes have impacted across a wide range of sectors including higher education.

Not only has the higher education sector become more competitive, but government and business requirements of graduates have resulted in additional pressures and changes that are resulting in a paradigm shift in the sector (Barnett 1994). The Robbins report (1963) represented the initial turning point in which higher education moved from a cultural good or position of status, to being seen as an economic good. The impact for higher education over the next forty years represents a shift from the elite to the mass, resulting

in the incorporation of higher education into mainstream society (Barnett 1994). This shift to incorporation brings with it concerns about planning, performance review, productive capacity, social and commercial contribution, value for money and quality. Further, and directly relevant to the knowledge economy, Douglas Hague (1991, in Barnett 1994) stated that if educational institutions do not possess a monopoly on knowledge, then it is debatable as to whether they are necessary at all, and perhaps they should compete as with other knowledge traders in an open market. Hague's view of knowledge in this respect is that at the right price, as with any product, knowledge can be bought and sold.

Hague's view is relevant in the context of knowledge management because historically higher education institutions were viewed as the keepers of knowledge and were looked to for guidance and direction in society. In the post modern environment, knowledge and learning have extended beyond the higher education business, therefore increasing the competition that higher education institutions must consider. Placing this in context, the giving and receiving of learning could be seen as the production process in higher education, delivered within a knowledge industry, which is not solely the remit of higher education any longer. Yet whilst many knowledge based private sector organisations make efforts to engage with knowledge management at a strategic and/or operational or project level, higher education institutions, which are the original knowledge organisations, do not appear to have successfully engaged with the concept in the management of the business to the same degree. In addition, this thesis will demonstrate that there is a gap in the knowledge management arena in the provision of a model, system, or framework, that would guide (rather than prescribe) an organisation in critical self evaluation of readiness to engage in knowledge management. The purpose of this research, therefore, is to develop a framework to evaluate the readiness of an organisation to engage with knowledge management, specifically a university.

Sveiby (1999) offers examples of many knowledge initiatives in the commercial and public sector. New Government initiatives and research are exploring knowledge management activities in the public sector and lifelong learning is impacting beyond the

higher education industry. Yet, while private and public sector organisations are introducing and developing knowledge management concepts in the running of the business, universities appear to be constrained by bureaucratic hierarchical systems. Where subjects that show synergy could collaborate, they are curtailed by bureaucratic and financial constraints. Internal collaborative possibilities are bypassed because the logic of the system will not support them. For example, structure, systems and processes still support internal departmental competition, rather than corporate cross organisational initiatives.

From this perspective, one of the advantages that knowledge management potentially brings to a university is that it is not restricted to the notion of a fixed and rigid organisation in permanent or semi permanent environments. It embraces the notion of transition and virtual working with fluid, ever-changing knowledge communities, which operate in project teams as the situation requires. This is relevant as universities strive toward E learning and virtual working environments, and attempt to introduce collaborative project working and cross-functional teams.

For it to be successful, however, it is important that knowledge management is not viewed by managers as just 'another project', and it is important that it is seen as a key component of business strategy. But knowledge management is neither a strategic objective nor a goal, as there is no end state. Rather, it should be a continuing and integral part of the business, embedded in the culture as is the case for quality. Therefore if the success of knowledge management is to be judged usefully, it must be linked to performance measurement of the business areas on which it impinges. It is important to note, though, that organisational performance and competitiveness are reliant on human behaviour and business processes, not just technological developments, which appear to be the basis upon which knowledge management has developed to date. Although technological development is positive, it also brings with it disadvantages, for example, the increase in technology has diminished the opportunity for debate and conceptualisation, leading to the loss of tacit knowledge (Barnett 1994, Duke et al 1999).

It is, therefore, the setting up of appropriate and balanced systems to develop and implement knowledge sharing that remains difficult (Lehaney, Hunt, Clarke, 1999).

Balanced systems may be stronger if they are encompassed within appropriate theoretical frameworks. One relevant approach to developments of this kind may be mixed-mode-modelling (Lehaney, 1996; Lehaney and Clarke, 1997), since this explicitly addresses user involvement. For successful development and implementation, knowledge management must be seen to be worthwhile by users from an early stage. The cultural difficulties of persuading organisations to share knowledge in an environment where knowledge may mean power, money, and promotion, cannot be underestimated. This can be obstructive irrespective of the structure of an organisation and more complex in a mass higher education sector, where a university community comprises a dominant culture, and multi sub cultures with varying levels of communication, language, understanding, diverse contextualisation and inconsistency.

There is a great diversity of relatively strong "subcultures" that co-exist on any particular campus. This leads to powerful differences of perception, opinion, and lifestyle, which are common sources of conflict. As Peterson and Spencer (1990, p16) highlight, "The literature on differing perceptions of administrators, faculty, and students and on the differences among disciplines and professions is extensive. Sensitivity to the potential existence of subcultures and sub-climates is important for anyone doing (work) in this arena".

Such challenges can be recognised in the initial case study for this research, i.e. the University of Luton. A key factor in the change experienced in the higher education sector and demonstrated from research undertaken in the University of Luton, was the transformation of what were previously public sector organisations, into market-led businesses. The initial impact of changes has meant radical structural shifts, with greater delegation in management responsibilities.

A MORI survey of University of Luton staff conducted in 1999 highlights specific issues that negatively impacted on staff during previous radical and continual change. These issues include organisational communication, interaction with management, inconsistency in policies and procedures, decision-making and change management (Wisdom and Kingdom 1999). As a result of this research, the University of Luton proposed to introduce a holistic change management programme to establish an organisational culture that recognises the importance of communication and learning and the establishment of both vertical and horizontal integration. In particular cross-organisational working is of primary importance for the future (Private Correspondence with Prof K Robinson 2000).

The University of Luton has a community of approximately 10,000 students and employs 1131 staff (as at 1999). The nature of work undertaken includes academic, consultancy, administration, technical support, maintenance, hospitality and social and welfare support of students. With the exception of consultancy and backroom functions, the majority of work involves direct interaction with the student as customers or clients, the student as the final product of the university and the student as a member of the collegiate community. Business consultancy has developed from the pressure to transform academic research into financially viable and feasible activities to generate additional income for the university. Irrespective of how the student or external business relationships are viewed, the shared knowledge and interaction between staff, staff and students, and staff and business impacts on the extent to which an efficient and co-ordinated service and provision can be delivered.

The issue of organisational culture is key to this research. An organisation wishing to address team building and knowledge sharing would wish to create “buy in” from staff, particularly since the nature of knowledge work is high level and requires judgements from people. In view of this, participatory approaches to the development and implementation of performance and knowledge management systems are advocated.

In summary, fundamentally, universities are now operating in a competitive knowledge industry. There are key issues that must be considered in their management. For example:

- society is no longer willing to foot the academic bill and is now requiring particular standards to be met such as value for money and increased production, therefore increased competitiveness. Judicious knowledge management may help increase production and responsiveness, facilitate smarter working practices, thus reducing duplication of effort;
- the business and community's capacity for absorbing knowledge has increased. Knowledge management may facilitate knowledge sharing horizontally, vertically and with the external interface;
- academic freedom and institutional autonomy has been replaced by control, surveillance, evaluation, monitoring and inspection. Acceptance of the ethos of knowledge management may engender and encourage academic freedom at a local level whilst assisting monitoring, control, feedback, evaluation, and action to strive toward a more competitive position.

The academic focus has been diluted to incorporate a multi task and administrative focus though not by internal design, but more in a reactive way to external forces that may not be recognised or genuinely accepted by the academic community. Barnett (1994, p24) states "... higher education can not address the interdisciplinary problems of contemporary life unless it is thoroughly interdisciplinary itself". However, universities are now debating the distinction between teaching academics, researchers and administrative staff, and in essence are considering different types of knowledge workers.

Wider perceptions of intellectual development and knowing how and what you know in business operations, and cross organisational working are in their infancy in the higher education sector. The changes are driven by business and commerce, and Government policy, implemented through the Higher Education Funding Council (HEFCE). Among many aims, the HEFCE intends to develop and sustain partnerships between higher

education institutions, businesses and the community and to enhance higher education outputs to meet the needs of employers and society (HEFCE 2001). These HEFCE drivers impinge upon higher education decision-making and form an important part of the environment in which higher education institutions function. To help achieve these changes successfully, it is proposed that a knowledge management culture will support and enhance how institutions are managed. An effective framework to evaluate the readiness of HE Institutions to engage with knowledge management in the management of the business will provide an effective process to assist in strategic decision making in the sector, enhance competitiveness and responsiveness in an increasingly expanding and competitive knowledge industry beyond higher education and help to address the structural and cultural issues that may cause difficulties in establishing cross organisational knowledge sharing and retention.

It is intended that the framework will facilitate the opportunity for a HE institution to review current knowledge management practices by recognising positive activities that already occur thus achieving understanding and buy in, whilst establishing what should happen to improve practices that are detrimental to KM.

1.2 Aim

The aim of this research is to develop a useful framework, based on theory and practice, which is designed to help evaluate a university's' readiness to engage with knowledge management in a holistic way, which will provide useable decision-making inputs that are understandable to managers.

1.3 Objectives

The objectives are to:

- provide a critical review of the knowledge management literature;
- establish a theoretical foundation on which a framework for evaluating the readiness of higher education institutions to engage with knowledge management can be based;
- assess practices and levels of knowledge management within case organisations;
- review current knowledge management frameworks and develop knowledge management best practice criteria;
- develop, from the foregoing, a conceptual framework that can be used to evaluate an organisation's readiness to undertake knowledge management;
- evaluate the conceptual framework through exposure to critique;
- revise the framework in the light of the evaluation;
- utilise the revised framework in a higher education institution;
- critically review and revise the framework to produce a "final" version;

1.4 Chapter Outline

The chapter outline (figure 1.4.1) sets the literature review and overall structure in context. Chapter 1 offered a broad introduction to knowledge management, the changing business environment in the higher education sector and the initial case study undertaken in the University of Luton used to gather preliminary empirical work. Chapter 2 provides an overview of the research design and method, which evolved and developed throughout this research from a basis in SSM. Chapter 3 leads into the problem situation in more detail exploring the types of issues that emerge, and considers the initial advantages that knowledge management may bring to a university. This chapter concludes with discussion of issues that should be considered in a framework for the evaluation of an organisation's Knowledge Management Readiness (KMR). Chapter 4 discusses what knowledge management is in more depth and draws together ideas that a framework for

KMR could contain. Chapter 5 explores frameworks that are already in circulation both in the academic and business worlds. This is intended to identify gaps and weaknesses as well as ideas and best practice. Chapter 6 begins the process of formulating a conceptual framework through reasoned critical discussion and consultation. Chapter 7 focuses on the application and testing of the framework in the University of Glamorgan. Chapter 8 provides a critical reflection of the research and chapter 9 offers conclusions, the contribution to knowledge that this piece of work offers in addition to further research that may be undertaken.

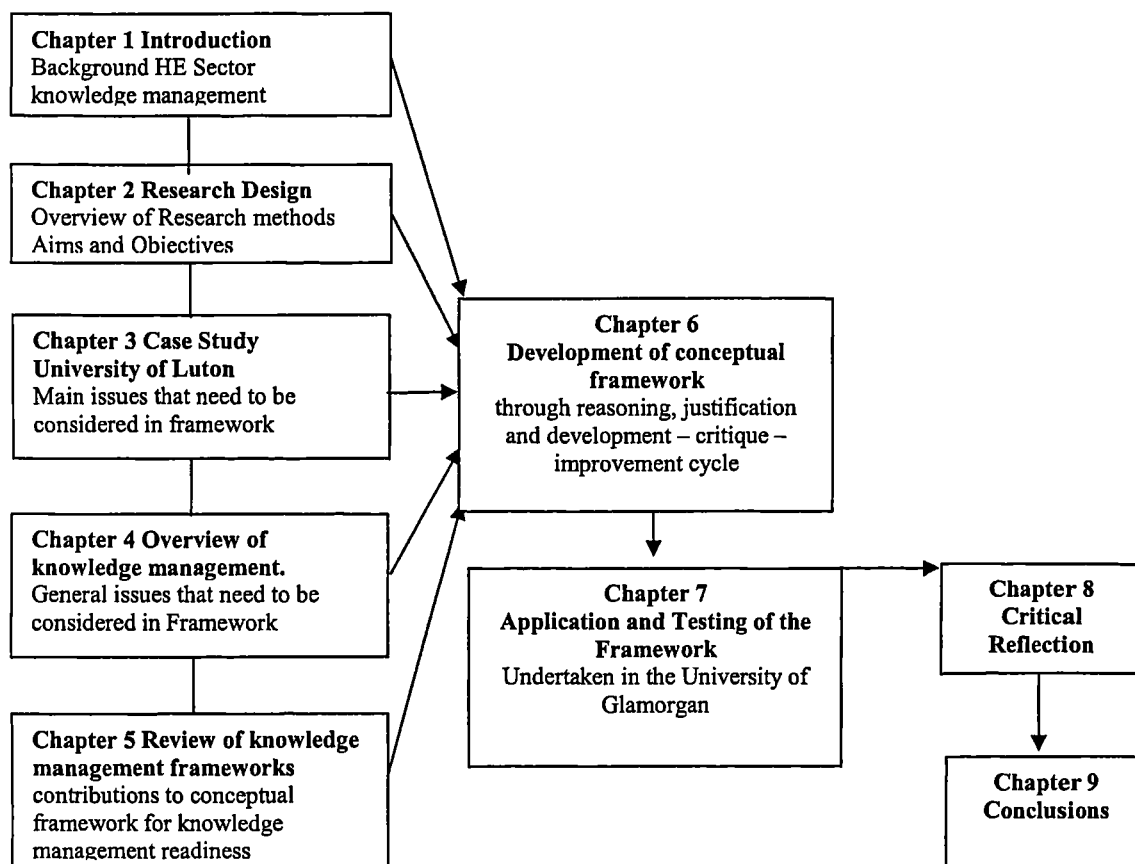


Figure: 1.4.1 Chapter Outline

With regard to the literature review, information regarding the higher education sector was taken from the HEFCE (1999/2000/2001), and texts that provide a historical perspective of how the higher education sector has evolved. There are many and varied texts available to explore management and organisational behaviour, for example Mullins (1996), Handy (1993) and Carnall (1995) discuss different aspects of behaviour, management and organisations. Huczynski and Buchanan (1991) focus on organisational behaviour. Pugh's "Organisation Theory, Selected Readings" (1992) was extensively used to review the development of management. Texts such as Johnson and Scholes (1993.), Pearce and Robson (1991), Ansoff (1976) and Bowman (1990) were used to review strategic management, and Buchanan and Boddy (1992) and Burnes (1992) for change management. Weick (1999) and Baldrige et al (1977) offer insight to universities which highlight the difference between universities and other organisation types. Commentary literature was derived from journals, and Internet sources. Journals such as 'knowledge management', 'Human Resources Management', the 'Journal of Intellectual Capital' provided current developments and discussion. Systems thinking, Soft Systems Methodology and the development of theoretical underpinning were drawn from Checkland (1981, 1990), Ulrich (1994, 2003) and Lehaney (1996, 1999). The review of knowledge management frameworks consisted of a broad review of various journals and internet sources (2000-2003).

To summarise, this chapter provided the background and introduced the aim, objectives and context in which the investigation was undertaken. The organisation of literature, introduces the scope and influences of information, representing a diverse and significant contribution to the multi methodological approach.

2. RESEARCH APPROACH

2.1 Introduction

This section discusses the approaches used for this investigation. It should be noted that this chapter reflects retrospectively the process of the investigation that was undertaken. The research design was continually evolving as learning and understanding developed, therefore sustaining sensitivity to findings and context. The study was qualitatively based using a combination of action research, observation, interviews, questionnaires, workshops and literature.

The research drew on the human activity system tradition and was qualitatively based. In describing such research, Gummesson (1991, p120) describes a fact as “definite and permanent, independent of subjective interpretation and independent of paradigm”, however, he states that in qualitative research ... it is unlikely that true factual data can be achieved. In essence, there is no direct access to ‘factual data’, but only to individuals’ and groups’ interpretations of data, which they themselves have received as others’ interpretations of data or personal perceptions of situations. The process of triangulation is essential in this respect to establish credibility and clarity and this is discussed in 2.3.

The underlying epistemology (i.e. assumptions about knowledge and how it can be obtained) was derived from an interpretive base with a critical aspect applied. Interpretive research assumes that access to reality is through social constructions such as language, consciousness and shared meanings. Interpretive studies generally attempt to understand phenomena through the meanings that people assign to them. Kaplan and Maxwell (1994) indicate that interpretive research does not recommend dependent or independent variables, but focuses on the complexity of human sense making as the situation emerges and changes.

This research attempted to explore and develop a framework in a multi-methodological manner, drawing from Soft Systems Methodology, and embracing pluralism.

2.2 Research Approach and Methodology

The research design illustrated in figure 2.2.1 is repeated at relevant points in this thesis as a convenient aid to remind the reader where information was gathered specific to each phase of research. Figure 2.2.1 shows how the investigation was undertaken. The process was context sensitive and it evolved as the research developed.

As this work used an action research approach Checkland's (1981) Soft Systems Methodology (SSM) was used (very loosely) as a basis. This choice was considered carefully and the arguments are noted here, however in order to maintain the flow of this thesis full and detailed discussion of SSM can be referred to in appendix 4.

First, it is worth noting that SSM may be accused of not being critical but based on consensus which underplays conflict and can result in compromise rather than radical improvement or change (Jackson 2000). It was used critically in this development, however, as will be shown in this thesis, knowledge management is all too often viewed as a technical domain (Edwards et al, 2003). SSM forces the consideration of other areas, such as social and political. Thus, by using this approach in this way, it avoids the development of a purely technical framework and acts as an ever-present critique.

SSM is aimed at human activity situations, learning from those situations and taking action to improve. Checkland (1981) describes the nature of human complexity identifying individual and group perceptions of a given situation, the social process, the culture, values and myths of how people make sense of the world. He regards SSM as being a process of holistic participative management achieving organised action. SSM also recognises the researcher's involvement, being part of the situation as well as exploring the situation. As such, SSM provided a guide and logical process of investigation that reduced subjectivity through participative wider perspectives of the situation.

Forbes (1995) highlights the advantages of SSM in relation to strategic management and planning, comparing traditional top down and prescribed strategic processes with a collaborative teamwork approach based on discussion and co-operation. A converse argument might be that such discussion could be carried out as a manipulative management approach, with those in power ensuring that debate is conducted in a manner conducive to their own abilities and desires. Buchanan and Boddy (1992, p77) define power skills in relation to change and the political arena of organisations as “the use of language to portray an image and influence the workforce, managing people’s perceptions”. Forbes (1995) does suggest, however, that the need for accurate information highlights the benefits of the participative approach, which can expose and clarify information and situations at varying levels in the organisation. Patching (1990) describes SSM as a meaningful way to engage in debate about structural, procedural and attitudinal changes among the workforce. He continues by explaining that SSM is not intended to find solutions, but to clarify issues and to establish a basis for further investigation and improvement. These perceptions of SSM were considered relevant to the concept of knowledge management since there is no end state and the ethos is continual learning and improvement.

In older (e.g. Checkland, 1981) versions, there are seven stages of SSM, but as Checkland and Scholes (1990, p27) state “The usual general description of SSM ... is presented as a seven stage process (giving) too much an impression that (it is a) process to be followed in sequence”. Checkland and Scholes (1990, p275) continue to explain that “SSM not only develops and changes, (it) also gets used in different ways by different users in different circumstances” in action and to take action. Figure 2.2.1, therefore, illustrates the customised or adapted model, developed by the author during this investigation. The adaptations reflect SSM and action research. The model contains four phases of investigation, within which clusters of activity were undertaken.

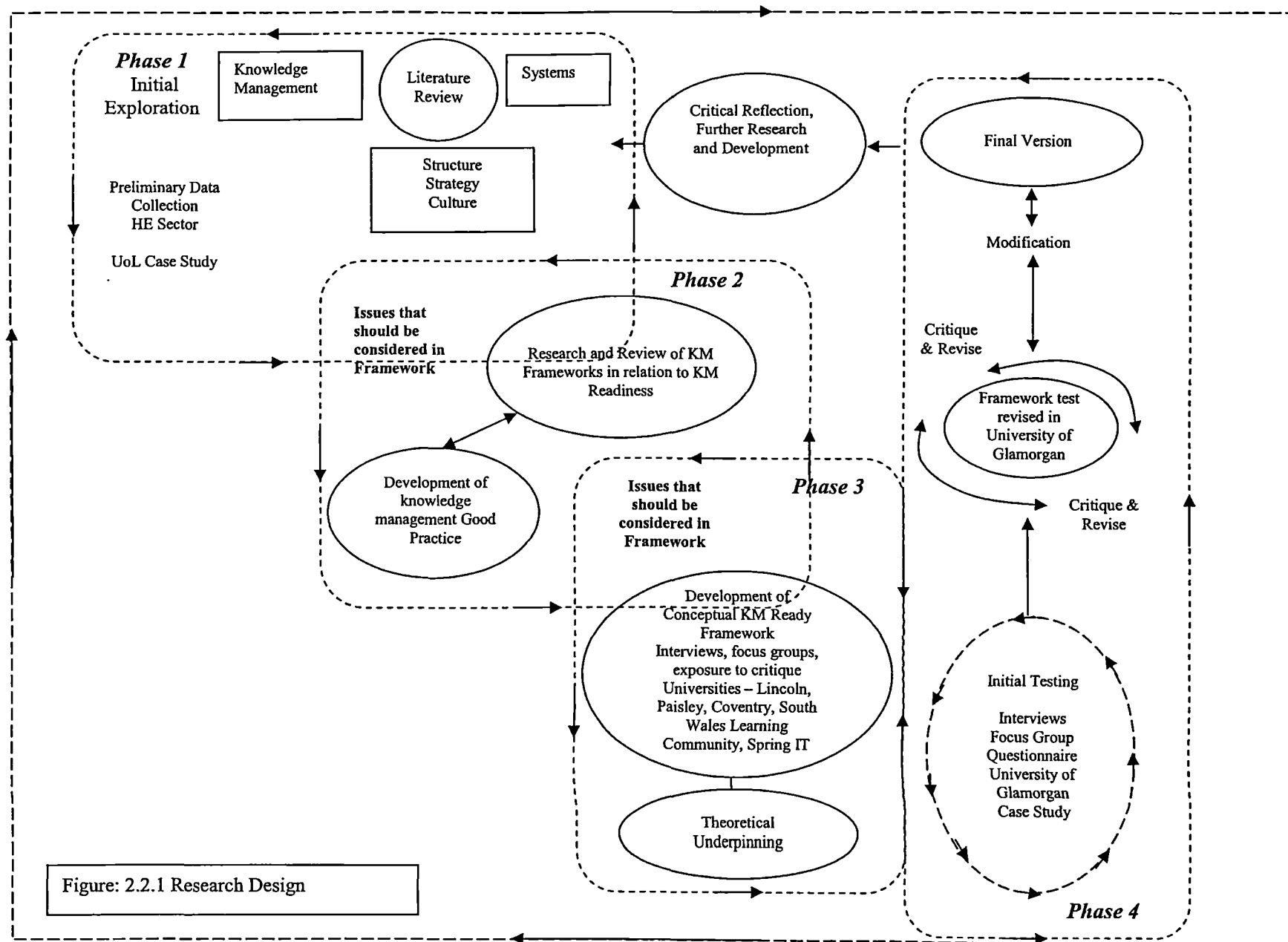


Figure: 2.2.1 Research Design

The model contains four phases of investigation, within which clusters of activity were undertaken.

Phase one incorporated the interpretive approach, using primary and secondary data collection through case study and action research. Action research has been accepted as a valid research method in applied fields such as organisational development and education (Checkland 1991). Case study research is the most common qualitative method used in information systems (Orlikowski and Baroudi 1991, Alavi and Carlson 1992).

Phase one identified the initial idea and formulation of preliminary objectives. Combining the initial data collection and literature review provided clarification of the wider issues, and influenced the development of this investigative model, which served to meet the aim and objectives and reflected a participative approach that embraced the varied issues that emerged in the research. This is the first stage of constructive research at the University of Luton (UoL) and the techniques used involved questionnaire surveys, focus groups with staff in the case organisation, interviews, participant observation, collaboration and a review of texts, journals, and minutes of meetings.

A literature review of knowledge management, the higher education sector, organisational structure, strategy and culture and systems helped to clarify the context in which the investigation was undertaken and raised issues for consideration in a potential Knowledge Management Ready framework. This in conjunction with the author's background knowledge and experience increased understanding about the issues and perceptions emerging in the overall situation and what could be considered within or contribute to the development of a framework to evaluate an organisation's readiness to engage with knowledge management.

Phase two explored current knowledge management frameworks that purport to address knowledge management. This aspect of research was relevant to the investigation to draw out contributory factors that could be considered in a framework for a university's Knowledge Management Readiness (KMR) and assisted with the identification of best

practice criteria, implementation approaches and weaknesses or gaps whether theoretical or practical.

Phase three was the formulation of the conceptual framework, undertaken through an iterative cycle of development, critique and improvement. It was at this stage of development that the need for further attention to critical evaluation beyond that which SSM was able to deliver when testing and ultimately implementing a framework became clearer. If critical evaluation had not been considered, the implementation of the framework in a university would have remained either prescriptive or descriptive. An evaluation matrix and underpinning theory were developed for the application of the framework.

Phase four involved applying and testing through empirical work in the University of Glamorgan, critical review and analysis of the 'final' framework produced and this was undertaken in two stages. Stage one involved interviews, focus groups and questionnaires, from which feedback informed further development of the framework. Stage two involved further testing of a revised framework undertaken with a different and independent group of staff from stage one, confirming a 'final' version had been achieved.

An important issue to emphasise is that this entire research approach was iterative, both overall and within each stage, using a development critique and improvement cycle. In addition, cross referencing from one stage to another occurred. In keeping with SSM, this model maintained a traditional qualitative approach with an action-oriented outcome. The ethos and principles of SSM were broadly upheld to maintain an overview and involvement in the investigation, complementing the overall multi methodological approach. The concept of Customer, Actor, Transformation, Weltanschauung (worldview), Owner and Environment (CATWOE) was used as a guideline to ensure that all components that should have been included were included, and those that were not were justifiably excluded.

2.3 Triangulation

Given the subjectivity of this research and the author's involvement as a participant observer, it was essential to try to ensure the reliability and validity of the research. Triangulation provided a recognised and useful approach, for example by a multi method approach, as was the case in this investigation. Denzin 1978 (in Decrop, 1999, pp158-164), identifies four different methods of triangulation:

- data triangulation, which involves the use of information, derived from literature sources and fieldwork ;
- method triangulation which is the use of multiple methods to solve a single problem;
- investigator triangulation, which requires several different researchers to interpret the same information thus avoiding personal bias, or alternatively, the use of an external auditor to review information and confirm its validity;
- theoretical triangulation, which is a multi-perspective such as anthropology, psychology, sociology etc to interpret the same data.

This research utilised investigator, data, and method triangulation. Method triangulation involved semi structured or unstructured interviews and meetings with internal staff and external experts. All primary and secondary research and fieldwork conducted in the University of Luton, through seminars and focus groups at Paisley University, Lincoln University and Coventry University, in addition to seminars conducted with the South Wales Learning Community, contributed to the initial development of a conceptual knowledge management framework. Testing of the conceptual framework in the University of Glamorgan in addition to further interviews, continued to progress the research incorporating triangulation to achieve a 'final' version.

Investigator triangulation included secondary research such as the University of Luton MORI Survey (Wisdom and Kingdom 1999) and a communication survey conducted by Bell Pottinger (1999). In addition the use of external collaborators such as the South

Wales Learning Community, Spring IT, and exposure of the potential proposal for critical review through conferences and journal submissions ensured the feasibility of this work.

Data triangulation included literature and fieldwork based on the University of Luton as an initial case study and included the author's own surveys conducted within the University of Luton such as Health and Wellbeing survey, change management focus group (Jack 1999), and University of Glamorgan focus group. The development of the framework underwent a development, critique and improvement cycle.

2.4 Conclusions

To summarise, this chapter provided the research design and methodology, describing how this investigation was undertaken. The research design is repeated at appropriate points in this thesis as a guide to demonstrate how it remained context sensitive, evolved and was applied. The work used an action research approach broadly drawing on SSM. SSM, however has been accused of not being critical, but it was used critically in the development of this framework and was further relevant because knowledge management is often viewed as a technical domain, whereas SSM forces the consideration of other areas, such as social and political human activity situations.

The research design shows four phases of investigation, within which clusters of activity were undertaken. Phase one identified the initial idea and formulation of preliminary objectives in addition to initial data collection and literature review.

Phase two explored current knowledge management frameworks that purport to address knowledge management representing a significant aspect of the research undertaken.

Phase three was the formulation of the conceptual framework, undertaken through an iterative cycle of development, critique and improvement. It was at this stage of development that the need for further attention to critical evaluation beyond that which

SSM was able to deliver when testing and ultimately implementing a framework became clear.

Phase four involved applying and testing through empirical work in the University of Glamorgan, critical review and analysis of the 'final' framework produced.

The entire research approach was iterative, both overall and within each stage, using a development critique and improvement cycle. In addition, cross referencing from one stage to another occurred. In keeping with SSM, this model maintained a traditional qualitative approach with an action-oriented outcome and the ethos and principles of SSM were broadly upheld to maintain an overview and involvement in the investigation.

Given the subjectivity of this research and the author's involvement, investigator, data, and method triangulation were utilised, demonstrating the multi-methodological approach.

3. CASE BACKGROUND

3.1 The Higher Education Sector

Chapter 1 offered an introduction to this research, the changes in the higher education sector which provide context in which the research is undertaken and briefly demonstrates the emerging benefits of knowledge management concepts to the business of managing a university. Chapter 2 provided the research design and approach taken. As highlighted in figure 3.1.1, Chapter 3 falls within phase one of the research design, and provides an account of initial emerging issues that arose from empirical work conducted at the University of Luton. Some background to this is provided first in order that the context is understood.

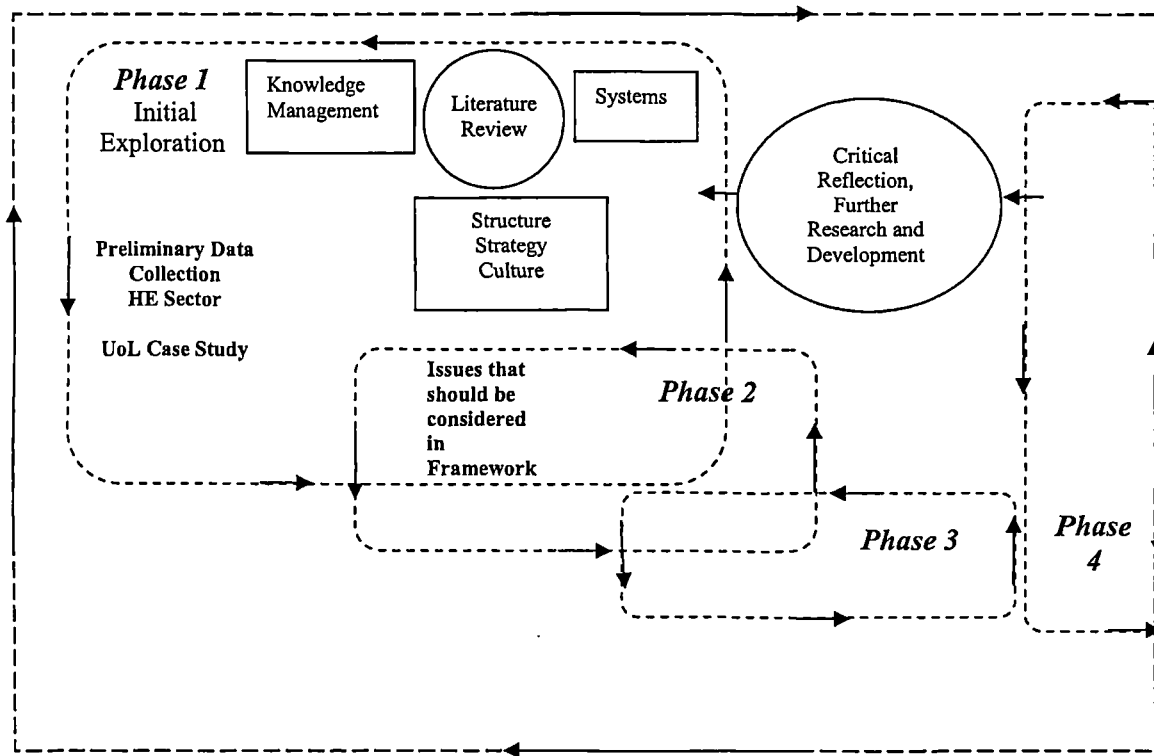


Figure 3.1.1: Research Design Phase One (adapted from figure 2.2.1) – The Higher Education Sector

The main influences for change in universities have been Government driven, particularly with the introduction of the Further and Higher Education Act 1992, and the abolition of the division between universities and other higher education institutions. Subsequently, the establishment of the Higher Education Funding Council for England (HEFCE 2001) assumed responsibility for the strategic development of higher education. Among the many HEFCE strategic objectives and organisational aims, the following are highlighted to demonstrate the potential synergy with the concept of knowledge management in a university (HEFCE 2001):

- the development and maintenance of effective partnerships with universities, employers, other funding and professional bodies, and others with a stake in higher education, by providing clear and open information and promoting collaboration between them (external knowledge management initiative);
- the promotion and support of productive interaction between universities, business and the community to encourage the transfer of knowledge and expertise, and enhance the relevance of programmes of teaching and research to the needs of employers and the economy. An important task in meeting these aims will be to forge closer, better informed and more productive partnerships between universities, businesses and the community and with other agencies. All universities need to recognise the full value of the knowledge and expertise of staff. This will require commitment and action across each institution (external knowledge management initiative);
- the promotion of effective financial management, accountability for the use of public funds, and value for money. Universities are regarded as independent organisations responsible for managing their own affairs effectively and efficiently. HEFCE are responsible for ensuring that funds provided for teaching and research are only used for those purposes, while promoting value for money. Emphasis is placed on action to minimise future financial risks by pushing universities to diversify their income streams; to charge the true price for research and consultancy activities; to control recruitment spending and to remove any duplication in the business through increased collaboration. (External knowledge

management initiative, however the issue of duplication could be an internal or external initiative).

Universities are expected to produce strategic planning processes that are actively used to manage including financial management, strategic management of information resources and management information for decision making. Also included are effective equal opportunities policies and procedures, learning and development from international experience and the development of virtual distance learning (HEFCE 2001). External influences, both technological and political, are bringing the economies of the world towards greater integration and increasing world competition as much in education and training as commercial business. HEFCE (2001) recognise that increasing premiums are being placed on knowledge which, in turn, makes national economies more dependent on higher education's development of people with high level skills, knowledge and understanding, and on its contribution to research. Whilst more investment is needed in education and training to meet the international challenges, universities need to demonstrate that it represents a good investment for individuals and society.

It emerges from the foregoing that Higher Education is in a period of change. Individuals increasingly need to develop new capabilities and to manage their own development and learning. New technology is impacting extensively and has implications both for the skills which universities need to develop in students, and for the ways in which education is managed and delivered. Communication and information technologies may improve the quality and flexibility of a university and its management; however, implementation requires investment in terms of time, through resources and senior management commitment.

In addition to technology, the health of a university depends entirely on its staff, whether academic, professional or administrative and the need for recognition, opportunities for personal development, and rewards. Roles of staff are likely to change, as they undertake different combinations of functions at different stages of their careers. To support and prepare staff for new working patterns, more focused and appropriate training and staff

development activities are needed. HEFCE provide funding in support of this through the "Rewarding and Developing Staff" (December 00/56), and "Good Management Practice" initiatives (August 99/54).

When considering the key issues discussed in the previous chapters, several areas emerge that seem relevant to a framework that would help assess the readiness of university to engage with knowledge management:

- development and implementation of internal policies and procedures;
- the ability to learn and share the learning experience, thus avoiding duplication and improving effectiveness;
- effective IT infrastructure to ensure the tools necessary for accuracy, speed of information exchange and storage;
- training, development and awareness of expertise of staff i.e. knowing who knows what;
- reward and recognition of employees, incentives to encourage knowledge sharing;
- management competencies for the effective implementation and inspired leadership in knowledge management;
- ability to create, share and utilise knowledge with other organisations and higher education institutions and awareness of the global marketplace, the external knowledge management focus.

These drivers impinge upon university decision-making and the concept of knowledge management, and form an important part of the environment in which universities function. The initial impact of changes on the (previously) Luton College of Higher Education (LCHE) and (now) University of Luton meant radical structural shifts, with the creation of highly delegated management structure, and more recently, full scale strategic repositioning. The scale of change can be indicated by comparing the 1989-90 full-time equivalent student numbers (4200) and student/staff ratio (13:1) with those of 1999-2000 (10,122 and 18:1 respectively).

As part of its strategic repositioning, the University of Luton initiated an organisational-wide change management programme to establish an organisational culture that recognises the importance of communication and learning and the establishment of both vertical and horizontal integration. In particular cross-organisational working was of major importance for the future and such change fell within the domain of knowledge management. These issues and other related background are discussed in section 3.2.

3.2 University of Luton

The University of Luton became incorporated with the Higher Education Funding Council for England in 1993. It is a continually changing organisation, which is necessary to survive in an increasingly competitive higher education sector. The higher education sector generally has undergone fundamental change throughout the past five years, with changes to funding shifting the emphasis from a free provision to a commercial commodity that students are required to purchase. Greater pressures are being placed on the workforce, to improve quality, accountability (HEFCE Dec 00/56), and performance (HEFCE Aug 99/54), and the University of Luton continues to strive to enhance corporate performance and attract income at a time when resource allocation continues to decline.

A key factor in the change experienced was the transformation of what was previously a public sector organisation, into a market led business that would be required to consider customer demand, commercial financial management and high quality provision. Such transformation was viewed as radical change by many staff.

The impact on the University of Luton meant structural change with the creation of a "...flatter, simpler and highly delegated management structure..." (Wood and Bunker 1994, p76). The intention was to provide greater empowerment for faculties with devolved budgets and the opportunity to determine resource allocation within the overall corporate objectives. Faculty-based, pre-set courses were replaced by a modular scheme, offering students the opportunity to customise their degree programmes. This resulted in

traditional course teams becoming more disparate but, the overall structure of the organisation remained faculty based. Furthermore, internal competition for students contributed to an emerging obstruction in communication, despite the increase in electronic communications. Thus it is important to note that 'improving' technology is not a necessary nor sufficient condition for improving communication. Indeed changing the internal culture to one of competition from one of cooperation can worsen communication. Whilst technology can be helpful, the emphasis of knowledge management should be on cross-disciplinary approaches and "the mixing of 'hard' (e.g. technological) and 'soft' (e.g. cultural or motivational) issues (Edwards 2003, p1)

Other activities during the period 1991 to 1994 in the University of Luton included the establishment of a central staff development unit to support and sustain the culture shift. The combined pressure of growth and structural change made it essential for staff development activities to be given high priority and a Quality Network was introduced in 1991, which stressed the importance of honesty, trust, respect, empowerment, consultation, teamwork and equal opportunities, all supportive of the knowledge management ethos. Harding (1995), however, describes what could have been the ineffectiveness of these initiatives through a work-study conducted into staff attitude. Several key points emerged from this study that identified underlying reactions to the change experienced during this period. The most significant was that there was not and still is not the opportunity to engage in peer/social support, informal communication and to generally discuss issues of concern that may have arisen. This appears to have resulted in confrontational behaviour by older academic staff particularly toward their younger counterparts, clearly a significant obstruction to the concept of knowledge management and detrimental to succession planning and organisational memory. Training and personal development opportunities were limited because low staffing levels reduced the possibility of release to attend training sessions, and formal communication and participation in decision making was inadequate. The foregoing was further reinforced through recent surveys conducted in the university such as:

- market and opinion research international (MORI) survey in 1999;
- internal communications survey (Bell Pottinger 1999);
- health and wellbeing survey (Jack 1999);
- IT survey (Jack 2000);
- 360° Pilot feedback focus group (Jack 1999);
- change management focus group (Jack 1999).

All of the above contributed to the case background and provided secondary and primary research which was considered from a knowledge management perspective. This is discussed next.

3.3 University of Luton Secondary Research

3.3.1 Market and Opinion Research International (MORI) Staff Survey 1999

The MORI staff survey arose in part from recommendations made during a preceding 'Investors in People' assessment. The intention was to undertake a major staff satisfaction survey among all sections of the workforce. The questionnaire was designed, delivered and analysed by MORI using questions drawn from their own experience and from focus groups held with staff.

All staff were given the opportunity to take part in this survey and 611 returns were received, representing 54% of the workforce. The results were helpful and informed understanding about the university, identifying associated issues that could be addressed by knowledge management. In this respect, the most relevant questions or statements and results are highlighted in appendix 1.

Overall, according to the MORI survey, there was a perception that the current culture and attitude in the university, is bureaucratic, demanding, authoritarian and inflexible. Comparing this with how staff would have preferred the organisation to be in the future, 85% indicated that they preferred a motivating, organised and caring organisation, which

is creative, exciting and dynamic. Communications emerged as a specific problem, in particular the perception was that:

- there is not enough opportunity for staff to let management know about things that affect them and their work;
- there is inadequate consultation on management decisions;
- there is little recognition for the work produced and poor feedback on performance and praise for good work;
- disagreement with issues proposed by senior management can damage career prospects.

Although most staff understood and supported the need for change and indeed looked forward to the challenge, they did not feel involved and believed that the change process was poorly managed, particularly communication. Despite this, staff had a clear understanding of the contribution they were expected to make and understood the organisational objectives. The majority of staff felt that they have accomplished something worthwhile at work.

The outcome of this response indicated the negative attitude that staff had toward the senior management of the organisation. This could present a significant obstruction to the university in terms of knowledge sharing and creativity. For example, Parlbay (2000) describes the need for trust and confidence throughout the organisation, necessary to foster the appropriate culture for knowledge sharing. However, even with such a culture the issue of power and politics may remain at an individual level, indicating that any organisation without the right culture would not be in a position to contemplate knowledge management.

The history of the University of Luton was one of continual change, in what appeared to be an authoritarian, task oriented management environment. Harding's (1995) work study exposed conflict, limited opportunities to attend training, poor communication and lack of involvement in decision making during this period. The results of the MORI

survey, conducted in 1999, provided a more recent overview of staff attitudes in the university, and revealed that the main issues of concern related primarily to organisational communication and interaction with management, decision-making, and change, motivation and innovation. In addition, stress emerged as a major issue of concern and was explored further by Jack (1999), appendix 2. Although the focus of Jack's survey primarily explored health and wellbeing from an organisational management perspective, similar issues were raised that relate to communication, management and planning, again highlighting potential obstructions to engage with knowledge management.

3.3.2 Health and Wellbeing

The overall aim of Jack's (1999) research was to investigate management approaches based on a case study scenario relevant to universities in relation to wellbeing in the workplace, and consider the potential improvements in performance and effectiveness that may be achieved by appropriate management practice. Management and organisational behaviour were investigated in relation to psychosocial factors and the impact on wellbeing, with comparisons to examples of modern working environments and management practice. Strategic management in relation to 'human assets' was discussed concluding with the proposal that managers should include psychosocial factors that influence wellbeing at a strategic level, particularly in people intensive knowledge based organisations. A combination of a survey, semi-structured interviews and meetings with internal staff and external experts contributed to knowledge and understanding about the organisation and emerging issues. Internal research such as the MORI survey influenced the author's choice to focus specifically on a research survey to measure attitude toward wellbeing at work.

This is relevant to knowledge management in two respects. In the first place it could be suggested that general wellbeing and positive attitudes in an organisation contribute to the effectiveness of knowledge sharing. If the overall disposition of the workforce is negative and 'unwell' then individuals may be less inclined to contribute to such an

initiative. Second, the concept of formal and informal knowledge sharing could be beneficial in generating a culture of peer support and improving the overall wellbeing of the organisation and assist in the reduction of stress.

A total of 95 responses representing 19% of the full amount of questionnaires issued were returned. As an independent exercise, this response rate could have been considered as low, but as a contribution to the broader investigation, it was adequate to provide indications. When querying with several staff why responses were not made, the main comments related to time constraints. In addition, many unopened envelopes were returned because the targeted member of staff had either left the university or relocated, but post was returned rather than forwarded on. This in itself raised an issue about communication, which, as demonstrated in the MORI survey was of concern to staff generally.

The responses in appendix 1 are summarised below. The most relevant are highlighted for consideration in respect to knowledge management.

There was a tendency among staff that indicated the university did not care about their health and wellbeing. Although senior management believed that it did, it could be assumed that that senior management's position was not communicated enough to staff, or senior management attitude did not demonstrate that which they believed to be the case. Department managers did not appear to have adequate time for staff management due to their own workloads. This can result in de-motivation, lack of leadership, recognition and poor performance. Alternatively, there may be a case in relation to time management and making time for staff. On the issue of leadership, Peters and Waterman (1988) state that leaders who throw themselves into a relationship with followers can make the followers feel elevated, who then become more active and interactive themselves, thereby improving performance. In relation to knowledge management, leadership of, a commitment to, and time for staff, underpinned by effective communication may improve the chances of success. However, based on the results of the surveys to this point, there was a strong indication that the University of Luton

needed to review management approaches and procedures before embarking on a knowledge management initiative.

When considering management of stress, the majority of staff agreed that management was not aware of rising stress and de-motivation. Staff did not generally feel that their wellbeing and motivation were considered within the overall planning and systems that were implemented. An interview with the Health and Safety Manager (Dr I MacKirdy, September 2001) revealed that stress was a significant issue, identifying management style and communication as being the main causes.

In summary, a review of management style, improved communication, systems and procedures, which could increase motivation and performance, may also contribute to the development of a culture conducive to knowledge management in the University of Luton. Comparing the results of this survey to the MORI survey, planning for change, participation and consultation were clear indicators of dissatisfaction. Additional feedback through this survey suggested that department managers' level of empowerment, authority and control were questionable, which correlates with the results of the MORI survey. There were, however, good examples of positive delegated authority, empowerment and control such as Teaching Quality Assessments where matrix team working in the organisation temporarily improved levels of communication and interaction, with both explicit and implicit knowledge sharing, which achieved positive outcomes. This however was not sustainable because it was an exercise in addition to core roles and not embedded in working practices.

Despite the focus of many of the statements in this survey staff placed high emphasis on communication. Recognising this, further exploration specifically into communication, was undertaken in conjunction with external consultants and this is discussed next.

3.3.3 Communications

Communication emerged as a key consideration initially in 1999 and again in 2001, as an issue of concern for staff at all levels in the University of Luton. Effective communication both internally and externally was seen as important to establish a positive reputation and effectively implement strategic objectives. Corporate communications, therefore, were explored further through focussed research conducted by Bell Pontinger (December 1999), across the university at every level. The author reviewed and analysed minutes and reports produced by the university's Communication Steering Group. The following key areas were considered:

- the quantity and quality of current communications;
- the existing feedback mechanisms (formal and informal);
- identification and analysis of the internal community;
- employee attitudes towards the current internal communication efforts;
- the different sources of information used by employees (both formal and informal sources) and their respective influence on employee attitudes;
- employee expectations from internal communication;
- current attitudes towards the organisation.

The results of this review highlighted that internal audiences did not feel equipped to defend or promote the university. Key messages and strengths were unclear in both internal and external communication. Although a high quantity of information was produced, and for some, resulted in information overload, the quality of the content needed to be improved, for example, the perception was that some communication had a defensive tone and was not targeted or categorised effectively.

The university visual identity (logo etc) failed to communicate corporate aims or values. This has since been renewed, however there is no evidence as yet to indicate whether it has had any effect. 86% of staff wanted clearer communication, in particular, about the university's strengths. Two thirds of staff felt it was important to know about student

achievements. 65% of staff received their information from colleagues and 35% relied on the grapevine. Fewer than half the staff felt they were kept fairly well informed and half felt that the information given was believable, but one-quarter suggested not always (Bell Pottinger 1999).

An Internal Communications Steering Group initiated and chaired by the author as part of this research was established to explore all avenues of communication including paper based, Intranet, Internet and email. A major issue of concern was the use of internal emails, in particular all-staff emails, and improvement of the university Intranet site. The Communications Steering Group considered issues such as technology, training, resources and time scales for introduction. The highest priority for the Steering Group was content, form and structure that might inform the development of an improved Intranet for the university including:

- information, resources and services accessed via the Intranet. However, whilst some discussion was held relating to desensitisation and the need for alternative communication avenues, this was not debated in the broader sense nor was a final conclusion or proposal reached;
- access and the need for different forms and/or versions of some intranet resources to make them more specifically relevant – and helpful – to the general groups who might access them, i.e. different clusters and forms of help desk services to support the needs of students and staff;
- the future design and development of the Intranet based on three domains or functional areas which would include corporate information, help and advice, personal/individual information.

The intranet was considered to be the university's authoritative information resource governed by the principles of self-help and self-service. Initially much of the information resources (documents, handbooks etc) were to be mounted in their present physical form but would subsequently be developed to make them more "e-environment" applicable and appropriate. Such material was to be governed by general rules covering temporal

currency and life, the point at which it was archived, and request procedures for access to archived information. A central policy was to be established that set document life “kill by” dates, rules established for publishing to the intranet, parameters set for design structure, functionality and “house style” and guidance provided on acceptable use.

Critically reviewing this approach it should be considered that if an intranet is to be a university’s authoritative information resource then all staff require reasonable access to the Intranet from networked desktop computing resources. Similarly students need sufficient access points and computing resources to support the increased access frequency and time spent exploiting the information and services intended to be available via the Intranet. This implies the need for the university to strategically plan for the procurement and delivery of such resources to ensure the success and utility of the Intranet, and at that time whilst this would have been desirable, it was not financially feasible for the university, nor was there a culture of knowledge sharing and expertise to develop an appropriate system.

As was demonstrated through the MORI survey (Wisdom and Kingdom, 1999) and Bell Pottinger survey (1999), the university regarded communication as being of critical importance to the organisation and until the most fundamental aspects of information gathering, storage, access and sharing is achieved to a reasonable level, it would be difficult to move toward the development of a holistic knowledge management strategy without such tools to underpin and facilitate the concept. Conversely even with the highest specification technology in place, without the appropriate management style, culture and processes to embed the concept of knowledge management, a holistic knowledge management strategy would be difficult to implement, hence the importance of balance as argued by Dwivedi et al (2002). Dwivedi et al produced a holistic knowledge management framework for healthcare institutions, within which they recognised the importance of integrating information communication technology and knowledge sharing, stating that healthcare institutions needed to “identify key sociological and technological roles” to achieve the culture change necessary to improve

efficiency. Bali and Dwivedi (2004) explore organisational culture and the implementation of management information systems, introducing the Management Information System Culture-Organisation, which combines the intangible requirements of culture change with the implementation of a new IT system. In both cases the importance of balance can be recognised.

To make effective use of technology, an organisational framework and structure that recognises the need for culture change could be established that links Intranet authoring and development staff with those within central support departments such as the Information Services Department. Skills, competencies, and to some extent roles, in these areas already exist in certain parts of universities, but to be effective and coherent such roles could be established in all functional areas and their activities co-ordinated and formalised through an appropriate organisational structure and mechanism. The role of a communications group would then be to co-ordinate the contribution, production and development of Intranet resources and services and to maintain the suitability and temporal currency of information. Such a structure is illustrated in figure 3.3.1:

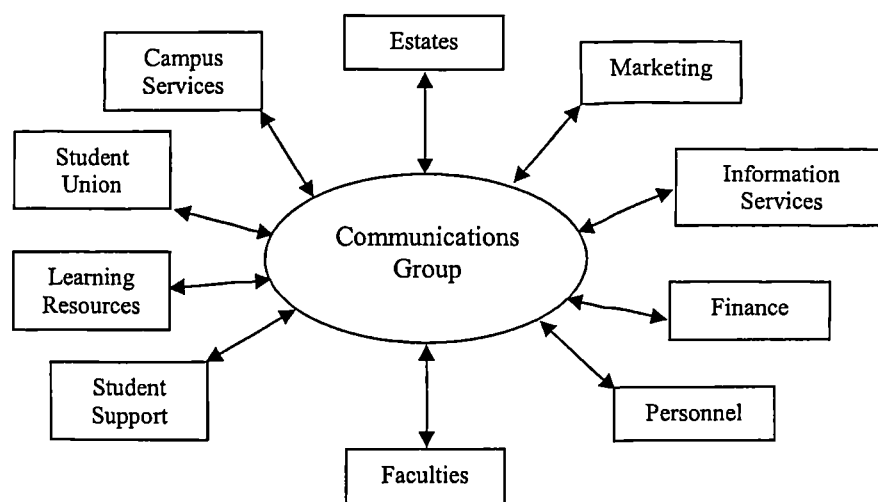


Figure 3.3.1 IT Based Knowledge Co-ordination Structure

Figure 3.3.1 provides an example of a potential structure for communication and information exchange and co-ordination, whereby university departments could take responsibility for the content within their own areas of the Intranet. This would require information officers within each area – faculties and departments – who would have responsibility for creating and updating their own areas. The Communications Steering Group would then become the recognised co-ordinating group, ensuring appropriate provision of information and quality for all electronic communication, including web site, intranet and emails. However, the Communications Group would need authority and senior management commitment to support decisions, and each department would need ownership and consensus to cultivate cross-organisational working, communication, eventually developing into knowledge sharing.

It emerged that the University's highest priority was the development of IT based communication. Emphasis was placed on a systematic centrally controlled structure. However for success, additional investment in staffing, hardware, software, training, and management commitment and understanding are an essential requirement. The university did not feel it necessary to consider the broader aspects of communication, such as informal, social or paper based, yet 45% of staff stated that they relied on the 'grapevine' and many did not have ready access to electronic communication tools. It appeared, therefore, that IT was continually identified from above as the solution to many communication problems, rather than a step toward facilitating the development of knowledge sharing. Further, if the 'grapevine' or direct interpersonal communication was formally recognised as part of the organisation's communication channel and 'managed' or facilitated effectively, it could be an important source of knowledge sharing achieved through a discursive process which maintains an added value and richness that would otherwise be lost. This brings the discussion back to consideration of management approaches and the ability to manage inter-relationships and maintain high levels of effective communication. This and other aspects of management development are explored next.

3.3.4 Management Development

Management development is necessary if knowledge management is to be embraced and progressed. Following the outcome of the MORI survey (1999), the Bell Pottinger survey (1999) and Jack (2000), the author undertook further research into management development, which included a pilot 360-degree assessment to measure management competency in view of strategic repositioning and external pressures to improve management performance necessary to achieve cross organisation working practices. The objective was to establish current management and organisational competencies and conduct a gap analysis against that which the university would need in relation to strategic repositioning and cross organisational working, from which a management training and development programme could be designed.

The 360-degree assessment was, at the time of this research, emerging as a human resource management technique in many organisations, large and small, and was being hailed as the most effective method of monitoring performance management (Goodge and Watts 2000, Peiperi 2001). The 360-degree assessment is a process through which managers' performance is reviewed by peers, subordinates and superiors, thus providing a rounded view of strengths and weaknesses. Goodge and Watts (2000, p 50) state that this process or technique "is inexpensive, widely applicable, and clearly focussed upon personal performance" if managed effectively. However, many 360-degree feedback initiatives fail through poor management of the process. Furthermore, Peiperi (2001) observes that peer review can be particularly problematic due to organisational politics and interrelationships. The University of Luton experienced both sets of problems which revealed key issues relating to culture, attitude and the 'health' of the organisation all of which could potentially negatively impact on the University's ability to engage with knowledge management.

In the first instance, there was little management commitment to undergo the 360 degree assessment, and of the managers who did engage with the process, many did so reluctantly. Secondly, to reduce costs, the entire process was to be conducted

electronically, but the software provided by the external consultancy was incompatible with university's systems. The group of participants displayed scepticism and wariness particularly regarding the selection process and the balance between academic and support managers, which highlighted the divide and differences between the two cohorts of managers and raised issues about organisational politics and interrelationships. Considering these revelations in the context of knowledge management, the lack of commitment, financial constraints, ineffective IT systems and negative attitudes toward an opportunity to improve performance points to inhibitors to the potential for knowledge management in the university.

Participants critically reviewed their own job descriptions compared to actual tasks undertaken, including dual roles and managers' time to conduct their current level of work, rather than considering perhaps new management competencies necessary to underpin the concept of cross organisational working and strategic repositioning in an increasingly competitive environment.

During and following the pilot, the author undertook telephone interviews with fourteen members of staff to explore in more depth some of the key issues that were emerging which revealed the following:

- questionnaires relating to the performance of managers provided a useful indicator of significant problems, for example, breakdown in communication in teams, and lack of leadership. The university's expectations of middle to senior managers, however, could be made more explicit;
- more could be provided for middle to senior managers relating to transparent objectives and supportive performance assessment exercises 'in house';
- undertaking an exercise such as this using IT only was incredibly user-unfriendly, too high tech with little opportunity to collect rich information;
- time to undertake this initiative was difficult.

The result of this component of exploration contributed to the overall research into the ability of an organisation to engage with activities associated with the concept of knowledge management at a fundamental level. Straightforwardly, it is clear that it is essential to secure senior management commitment and support, without which other recipients will not see the relevance of any given activity and changes in culture and attitude will be less likely to be successful. It is also recognised, however, that it is not senior management commitment alone that will secure success but 'buy in' from staff at various levels is equally important.

'Buy in' however presents a different challenge, because feedback during this exercise indicated that individuals often work independently and managers may have little contact with their peers, staff, and even within the same department, individuals may be unfamiliar with each other's abilities, roles and experience. In these circumstances, the implementation of a knowledge management strategy and culture could improve interactions, however this would require high levels of management competency in communication and relationship handling and change management with strong focussed commitment to achieve the right approach. This aspect of the University of Luton was explored further and is discussed next.

3.3.5 Change Management Focus Group

The author convened a change management focus group, comprising a cross section of staff at various levels, to explore different approaches in dealing with the organisational change that the University of Luton was experiencing, in particular to diagnose and address communication needs and explore management style bias. Many issues were addressed including staff's feelings of self-preservation and uncertainty that can be experienced during times of change. In particular managers needed to be aware that what they regard as restructuring and repositioning may be regarded by those upon who change impacts as destructive, raising levels of anxiety, disbelief and perceptions of being poorly treated. A major impact in relation to change in the University of Luton was mistrust between senior management and the rest of the organisation, and the

pressure on middle managers to implement and maintain change, whilst attempting to co-operate with senior management and their teams.

Middle managers indicated that they lacked confidence in their own abilities and the direction that the organisation was taking because they did not receive consistent and reliable information to manage effectively, and were aware that senior managers received distorted information about what was actually happening on the ground. Resources continued to be a major issue, and anxieties about this were exacerbated during downsizing. Low staff morale impacted on students and potentially the future attraction of the university and quality of service. The timing of change was regarded as important, and in the University of Luton's case, significant structural change occurred toward the end of the academic year, with the additional stress of exams, final assignments and marking. The net result was cynicism, loss, destructive, abrasive emotions and attitudes, feelings of guilt and failure.

Having exposed the impact of change, the focus group was moved to provide suggestions to improve the situation. Unambiguous communication and support emerged as the most beneficial way to manage change. A plan of communication with co-ordination and identification of specific times of change, for example the use of milestones was viewed as important to the process. Accurate communication, irrespective of whether the information given was positive or negative was seen as essential to manage staff expectations and to combat rumour. The focus group agreed that managers should consider what staff need to know, what the anticipated change is, why it is necessary, how it would be managed, where information could be accessed, when action would be taken, and who staff could discuss issues with. The focus group recommended that internal and external messages should be consistent both about the present and the future. Real, as opposed to 'quasi' consultation and involvement in decisions was viewed as essential to empower middle managers and provide ownership, which would help to establish senior management support and a sense of teamworking across organisational boundaries, as well as the 'buy in' necessary to strategically reposition the university.

In addition to paper based or electronic information, the focus group recognised the importance of opportunities for staff and managers to meet, and discuss issues in person and in teams. However, it was also recognised that middle managers felt they were losing credibility with their staff, because they were not being kept fully informed, and when they did ask questions, they were not being given clear answers, which resulted in conflict between middle managers and senior management, and middle managers and their own teams. The focus group discussed authority and motivational issues highlighting that whilst managers had the responsibility to implement change, they did not feel that they had the authority to reward staff who progressed positively, or to discipline staff if the need arose. The issue of disciplinary procedures was key to managers and discussion ensued about the setting of boundaries and standards that university contracts and managers expected staff to work within, and how these were changing without adequate support, training and development.

Placing the outcome of this focus group in the context of knowledge management, it is clear that to establish a cross organisational process that would facilitate sharing and enhance communication, a combination of senior management support, accurate communication, relationship handling, empowerment, involvement and consultation would improve the opportunity of engaging with issues of change, cross organisational working practices, change and the development of knowledge management. Time, however was another key issue, and the need for co-ordinated administrative support to release managers' time and provide appropriate levels of support to achieve cross organisational working practices.

3.4 Conclusions

This initial phase of research provided understanding about a university's key issues and challenges that would need to be considered if a university were to consider developing an approach to knowledge management. The University of Luton experienced a series of continual step changes from 1992 to 2000, when this research was undertaken. The perception was that the change experienced was in an environment of authoritarian, task

oriented management. The results of the MORI survey, conducted in 1999, provided an overview of staff attitudes in the university, revealing that the main issues of concern related primarily to organisational communication, interaction and relationships with management, participation in decision-making, empowerment, training and development, change management, motivation and innovation. Stress emerged as a major issue of concern in the MORI survey and was explored (see 3.3.2). This research exposed similar issues, revealing that communication, management and planning were key contributors that would impact on the successful implementation of knowledge management.

Communication issues were explored further (see 3.3.3) and a Communications Focus Group was established to review all aspects of communication in the university, the main focus at the time being on E communications. The university was striving for improvement and had positive intentions, which would contribute to the development of explicit sharing of information and an appropriate infrastructure to underpin this. However evidence emerged that demonstrated the increase in internal competition and reduced knowledge sharing. In addition, the University of Luton introduced a cross organisational change management programme, the intention being to address the university's culture. A key feature of this initiative was the role of a change manager, accountable to the Pro-Vice Chancellor, who acted as a stimulus; co-ordinator and motivator across all projects and initiatives, to generate cross-organisational interaction, knowledge sharing and working practices.

An essential premise of this position was that organisations cannot successfully adapt to fast changing external environments by engaging in a number of isolated mechanistic internal development projects which pay little attention to each other or to the culture of the organisation. In contrast an integrated and cross disciplinary approach was considered more likely to build a strong infrastructure of values and beliefs as well as shared business practices. Based on these examples, much of the work of co-ordination and integration in the University of Luton was carried out by the dedicated change manager or knowledge manager. This role required the ability to move freely throughout the organisation and build up an accurate picture of the progress and impact of change

and development as a whole. The intention was to explicitly recognise the current and desired organisational culture; the importance of communication (IT based and interpersonal) and learning and the establishment of both vertical and horizontal integration.

Taking into consideration the changing higher education environment and emerging external forces, in addition to the results of University of Luton primary and secondary research, it was clear that although there was an interest in knowledge management, for example through the appointment of a cross organisational facilitator and developer, there were organisational issues that needed to be addressed before reasonable engagement with knowledge management could be achieved. The following summarises the key university issues and identifies the potential advantages of knowledge management.

Primary and secondary research identified that interrelations between staff and management, internal and external partnerships with other universities, employers, funding and professional bodies and community organisations should be developed and improved. An appropriate knowledge management strategy beyond technology may alter the focus of the university placing such issues at the core and make explicit the priority and advantages of good interrelations to engender knowledge sharing. Included among the issues that emerged were value and recognition, feedback on performance, empowerment and authority, participation in decision making and consultation. In this sense, an effective knowledge management strategy and ethos is more likely to recognise the value of staff, an important requirement in a university where experts specialise in knowledge based work and the concept of development through learning and sharing should be based on mutual respect, confidence and trust in individuals' contributions to the overall university. The success of knowledge management in this respect requires high level management interrelations which can lead to reduced internal competition for resources, and high level communication skills (formal and informal).

Communication emerged consistently throughout the research and communication is core to the success of knowledge management. Knowledge sharing requires multi

dimensional interaction at all levels of the organisation, internal and external, which may assist with greater understanding about what the university is or aspires to be. If the university is committed to knowledge management, then this explicitly requires improved communication systems and technology implemented in a balanced way.

Motivation and recognition for work undertaken showed significant weaknesses in the university. The advantages that knowledge management can bring to this situation once again derive from communication activities such as peer support, mentoring, coaching, action learning and broadly critical discursive opportunities, all of which can be motivating for the individual and create innovative ideas.

Staff in the University of Luton cited a creative and dynamic environment as being one they would prefer to work within, and pressure for the HEFC indicated increased innovation and value for money as an expectation of universities. Knowledge sharing contributes significantly to creativity and organisational innovation, whilst underpinning the diversification of income streams through consultancy and research income. Further, knowledge sharing at an operational level is likely to reduce duplication of effort and enhance creativity leading to smarter working practices and identifying weaknesses where training and development are required.

Training and development can be delivered in many different modes, however the perception in the University of Luton was such that time to train was difficult to find, indicating a focus on formal training sessions. The concept of knowledge management is synonymous with the learning organisation, which incorporates both explicit and implicit training and development, organisational and individual. Learning from experiences, can contribute significantly as long as the ability, appropriate contextualisation and action is taken. Changing roles, awareness of expertise – who knows what, reward and recognition should all be considered if knowledge management is to receive serious consideration.

Management competency, change management and leadership were significantly criticised in the university of Luton research with an overall perception that management

were disconnected from the rest of the organisation. Inspired leadership is a key aspect of knowledge management as is cross organisational communication horizontal and vertical, and performance. Horizontal communication often falls into a top down mode, but must be a two traffic function if it is to minimise the perceived disconnection between senior management and the wider organisation. This could then assist with the provision of adequate and relevant information for decision making at various levels and contributes to the contextualisation and understanding and acceptance of decisions.

The information aspects of knowledge management relates to business processes. Strategic management of information resources and human resources assists with effective decision making. This includes the IT infrastructure to facilitate the speed of information exchange, storage of policies and procedures and documentation that comprise organisational memory and implementation processes. Effective IT should be available to underpin this, but is not the final conclusion.

The foregoing identifies some of the key issues and characteristics of a university which are issues that a framework for the critical evaluation of knowledge management readiness would have to consider. However whilst the working definition of knowledge management has been provided for context and a brief introduction to knowledge management offered (1.1) further consideration as to the main characteristics of knowledge management in the context of these findings is helpful to provide further clarity. Chapter 4 therefore offers an overview of knowledge management with emphasis placed on knowledge management and communication, and knowledge management and learning organisations as these appear most relevant to a university.

4. AN OVERVIEW OF KNOWLEDGE MANAGEMENT

4.1 Introduction

From the previous chapter it emerged that there are many issues that should be addressed to progress a university to a competitive and responsive position in a commercialised higher educational sector. In this respect the time is right for knowledge sharing initiatives. But if such initiatives are to be anything other than ad hoc, they need to be managed effectively and efficiently, and set within a strategic context. The management of knowledge, or knowledge management, has many different connotations and meanings and this chapter, which remains within phase one of the research design as illustrated in figure 4.1.1, considers the rise of knowledge management, and explores its characteristics.

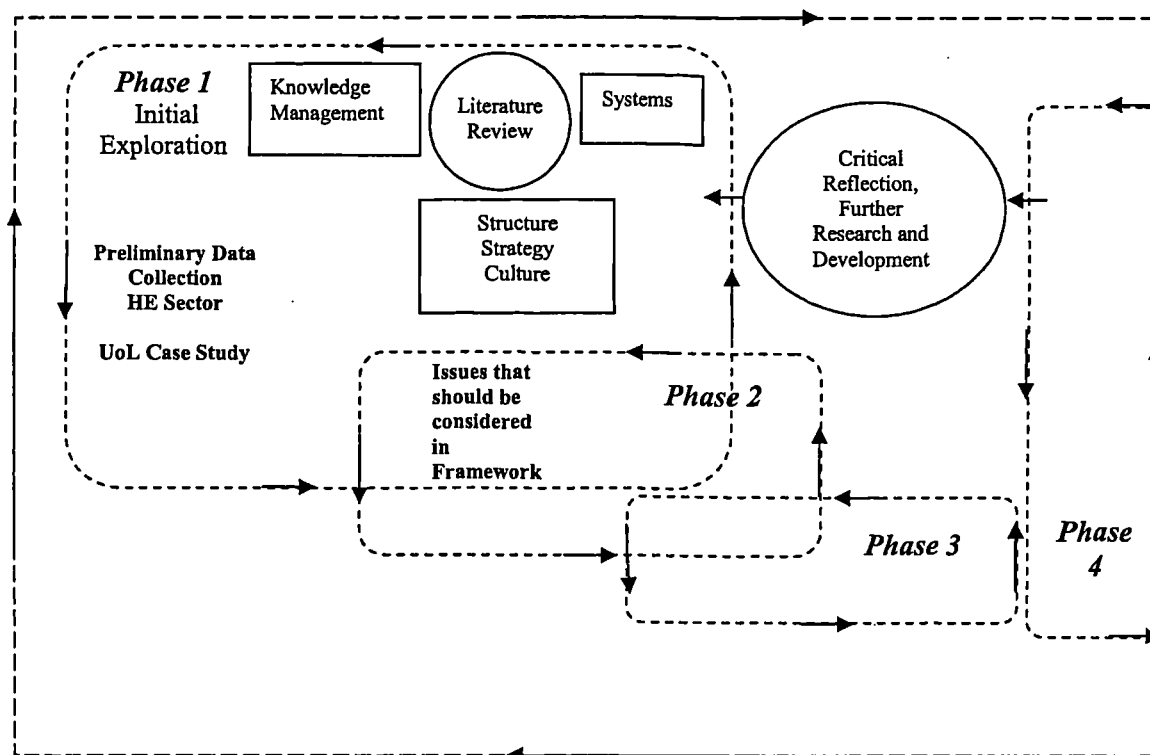


Figure 4.1.1: Research Design Phase one (adapted from figure 2.2.1) Knowledge Management.

An overview of knowledge management is provided, and the chapter concludes with a summary of knowledge management which encompasses the field, but which is also narrow enough to distinguish knowledge management from other disciplines.

4.2 The Rise of Knowledge Management

In the last decade business success and survival have become increasingly difficult to ensure, due to the emergence of a new era of organisational forms that embrace change. The emphasis is now on adaptability to the business environment and on addressing market and customer needs proactively. Organisations are evolving from traditional, “permanently” structured entities, to more fluid businesses, across a wide range of sectors. These include manufacturing (Zhang and Sharifi, 2000), healthcare (Bui, 2000), entertainment (Grant, 2000) and education (Warner, 2000). Whatever the sector, there is growing evidence to suggest that knowledge creation and retention is the key to gaining and retaining competitive edge.

There is significant evidence that knowledge management is of major importance to all kinds of organisations, and this importance is growing. A trawl of the web will result in literally thousands of entries regarding this area. Table 4.2.1 shows a range of knowledge management application areas.

Table: 4.2.1: Knowledge Management Initiatives (Source: Sveiby, 1999)

Knowledge Management Initiatives		
External Structure Initiatives	Internal Structure Initiatives	Competence Initiatives
Gain Knowledge From Customers	Build Knowledge Sharing Culture	Create Careers Based On Knowledge Management
Offer Customers Additional Knowledge	Create New Revenues From Existing Knowledge	Create Micro Environments For Tacit Knowledge Transfer
	Capture Individuals' Tacit Knowledge, Store it, Spread it and Re-use it	Learn from Simulations and Pilot Installations
	Measure Knowledge Creating Processes and Intangible Assets	
Companies		
Benetton, General Electric, National Bicycle, Netscape, Ritz, Carlton, Agro Corp, Frito-Lay, Dow Chemical, Outokumppu, Skandia Switzerland, Steelcase	3M, Analog Devices, Boeing, Buckland Labs, Chaparral Steel, Ford Motor Co, Hewlett Packard, Oticon, WM-Data, McKinsey, Bain & Co, Chevron, British Petroleum, PSL Consult, Skandia ASF, Celemi, Skandia	Buckland Labs, IBM, Pfizer, WM-Data, Affaersvaerlden, Hewlett-Packard, Honda, PLS-Consult, Xerox, National Technological university, Matsushita

There is little doubt that knowledge management has grown quickly and is set to continue to grow. There has been a wider recognition that the nature of western economies has shifted permanently from manufacturing to services, where knowledge, rather than physical assets, is at a premium (Stewart, 1997). Drucker (1993, p42) argues that "Knowledge is the only meaningful resource today. The traditional factors of production ...have become secondary. They can be obtained ... easily, provided there is knowledge". Traditional factors of production, from the discipline of economics, are land, labour, and capital. Technology tended to be added to this list from the late 1960s, but what is recognisable in Drucker's commentary is that none of these factors of production can be utilised in any sensible way without the application of knowledge. Thus it is knowledge that is key to success. Organisations recognise that technology based competitive advantages are transient and the only sustainable advantages are

employees. Indeed recent Government policy focuses greater attention on human factors than in the past (Dobson and Jowell, 1998). Such an emphasis reflects the view that “In the end, the location of the new economy is not in the technology ... It is in the human mind” (Webber, 1993, p27).

Stewart (1997, p6) supports the above by stating that “knowledge management for an organisation is critical, for knowledge is emerging as the pre-eminent economic resource above raw materials, and often money ... fundamental sources of wealth are knowledge and communication rather than natural resources and physical labor”. He adds that there is a need to couple knowledge with communication, and this emphasises that it is not just knowledge, but the sharing of knowledge that is of importance.

This growing importance is not just acknowledged by management writers, for in business this realisation is making its way into the boardroom. A survey by Breu, Grimshaw, and Myers (2000) had 576 responses from senior UK business decision-makers, with 50.4% stating that exploiting knowledge was on their board agenda. In the same survey 28.5% of companies had responded as having an organisation-wide knowledge exploitation strategy. In addition a survey by Murray and Myers (1997) found that over 89% of 100 European business leaders said that knowledge was the key to business power.

4.3 What is Knowledge Management?

Although the time is right for knowledge management initiatives, to achieve sustained competitive advantage, it must be considered beyond just the automation of manual tasks, if it is to avoid the fate of expert systems. These were used mainly in routine decision support roles, and are not seen as particularly useful by many organisations. However IT systems still appear to dominate the field of knowledge management as can be demonstrated by reviewing the Europe 2001 Knowledge Management Conference and Exhibition (27 November - 29 November). A total of 76 exhibitors attended this conference, of which 67 focussed on IT including technical consultancy, software

manufacturing, and knowledge software and associated IT systems. Nine exhibitors offered management consultancy and included the human side of knowledge management. With such emphasis on IT systems, there is a danger that knowledge management will only be seen as a technological process, but it is important to establish what is meant by the term “knowledge management”, both in concept and practice.

Knowledge management may be considered in a variety of ways. One typology is to classify knowledge management by distinguishing between tacit and explicit. Thierauf (1999) recognises that pure data would have little effect for a typical manager and structured data, as information, is useful to analyse and solve problems. Knowledge, however, is obtained from experts and is based on expert experience, as it requires a higher understanding than information alone. Explicit information comprises facts or data that is organised in a structured way, whereas knowledge incorporates values, beliefs, perspectives, judgements and know-how (Quintas et al 1997).

Allee (1997) proposes that knowledge only becomes meaningful when it is seen in the larger context of culture, which evolves out of beliefs and philosophy. From an economic perspective, Cohendet and Steinmueller (2000) assert that it is important to recognise context-dependent information as this distinguishes information and knowledge. For example, creating and reproducing conditional statements when exchanging and sharing knowledge presents problems for the codification of knowledge into information, and certain tacit knowledge cannot be reproduced anyway.

Whilst the concepts of knowledge and management are old, only quite recently have they been put together in this way. This is probably because management has been seen to be principally about clearly definable objects and processes such as finances, project management, corporate strategy etc. Those elements that did not appear on the financial returns often escaped specific attention. Even the task of managing people (human resource management) has only recently been established and often associated activities that comprise human resource management still have had difficulty gaining recognition. Thus, despite its obvious importance for many industries, the roles of the various types of

knowledge have seldom been specifically addressed in management theory and practice. Accountants normally cover it under terms such as intangibles and good will.

Failure to consider concerns, which were not accounted for in traditional financial analysis, such as the feelings of communities and the social costs of a company's actions, could result in strategic weaknesses. For example, David Snowden, presenting at the Knowledge Management Annual Conference 2000, discusses the codification of tacit and explicit knowledge in IBM. Snowden points out that whilst gathering and processing knowledge is expensive, e.g. IBM invest 5% of its total revenue into gathering and processing knowledge, he adds that "a company which did not embrace the concept might well be more concerned with survival" (Cummings 2000, p12-13), and in today's competitive environment simply surviving is not enough. Similar weaknesses may arise if firms ignore the acceptability of strategic options to key stakeholders. Stakeholders may seem relatively passive and even disinterested, but stakeholder groups tend to emerge and influence strategy as a result of specific events, such as the formulation and evaluation of potential new strategies. It is vitally important that the likely reactions of such groups, whether internal or external, are given appropriate consideration. Damaging situations may arise if their interest levels are underestimated. This is of particular concern if such groups act to thwart the implementation of a strategy that has involved time and cost to develop, and, even worse, if no sensible and acceptable alternative strategy has been formulated.

The foregoing discussions are especially important in a post-industrial society and for service organisations within such a society, and the relevance of knowledge within such organisations was recognised by Bell as far back as 1973: "Post-industrial society is organised around knowledge" (Bell, 1973). For both internal and external purposes, knowledge sharing and knowledge management within firms is important to success and competitive edge. If knowledge sharing is to occur, and if it is to be managed, it is self-evident that for the former communication is vital, and for the latter, policies, procedures, and strategies will play a key role if anything other than ad hoc communications are to be achieved. Good communications are key to knowledge management and knowledge

creation, and Nonaka and Takeuchi (1995, p3) describe organisational knowledge creation as “the capability of a company as a whole to create new knowledge, disseminate it throughout the organisation and embody it in products, services and systems”.

4.4 Knowledge Sharing and Communication

Whilst communication is regarded as key to knowledge management, it is also an essential ingredient in many management theories, from an operational and strategic perspective. For example, Dolphin and Fan (2000) discuss the importance of corporate communications and the role and function of communication executives, and the impact of corporate communications upon the formulation of corporate strategy. Peters and Waterman (1988) discuss informal communications in excellent companies and the advantages in relation to action and progress, rather than formal bureaucratic paper based communication, often found in large organisations. Accepting that communication is central to the success of knowledge management, this is both from an information theory perspective in relation to the technical domain, and constructivist perspective in relation to the people domain. Organisations often experience difficulties achieving effective communication in both domains, as demonstrated in the University of Luton case. This may be a common difficulty more often in traditional bureaucratic organisations and specifically in relation to tacit knowledge.

When thinking about classical management approaches and organisation hierarchies, communication problems primarily could be as a result of the environment and organisational structure but may also be because the concept of communication is not fully recognised and often reflects a one way process rather than an exchange or dialogue. With regard to tacit knowledge, Nonaka and Takeuchi (1995) argue that western society is too focussed on explicit knowledge, which is formal and systemic communication, whereas Japanese companies recognise and value the concept of tacit knowledge. However, they state that “tacit knowledge is highly personal and hard to formalise, making it difficult to communicate or share with others. Subjective insights,

intuitions, and hunches fall into this category of knowledge” (Nonaka and Takeuchi 1995, p8).

Formal and explicit knowledge can easily be processed by a computer, transmitted electronically, or stored in databases. By this definition, explicit knowledge tends to be hard facts, quantifiable information, policies and procedures, whereas tacit knowledge is the experience and wisdom developed as a result of using and applying hard information, whilst absorbing the internal and external environment and culture of the organisation and its industry. Nonaka and Takeuchi (1995) highlight the importance of converting tacit knowledge into explicit knowledge if it is to be of any value to a company. But this could also indicate the systemisation of people’s thought processes and wisdom, rather than valuing the workforce’s collective knowledge as well as individuality and the contribution they make to the organisation. The process of converting tacit to explicit for purposes of communication and providing value to an organisation, therefore, appears to be an idealistic concept. It could be argued that formal organisational systems are limited in scope and can not capture the culture of the organisation. Alternatively there may be methods such as the use of rich pictures that could be a useful method of translating tacit knowledge to an understandable language with aspects of knowledge converting to explicit. But still only aspects of tacit knowledge will successfully convert, as much of tacit knowledge is built on a foundation of social conditioning, values and beliefs, which form individual perspectives of the world. Alternatively, perhaps there is no need to convert the tacit to the explicit, but to manage tacit knowledge in a way that complements and implicitly contributes to the organisation. Peters and Waterman (1988, p123) recognise that there is an immense network of informal communication and open access to managers, a “virtual technology of keeping in touch”.

Whilst a communication process may incorporate a variety of techniques ranging from reports, visual identity, correspondence and E communications etc, there is no guarantee that the intended message has been received and understood. In the technical domain, often the information is more quantifiable so the same problems are less likely to arise. However, Polanyi (1966) states that tacit and explicit knowledge are not entirely

separable forms of knowledge, because all explicit knowledge has a tacit dimension. This is further highlighted when considering Watzlawick's (1968) view of communication as a broader concept than just exchanging information, but incorporating behaviour as well. By incorporating behaviour, Watzlawick's approach to communication addresses issues such as the interpretation of the intended message, intention of those delivering the information, relationship influences, the context in which the message is set, all of which clarify meaning, but still only to a certain extent. Social conditioning, cultural differences, other external influences will always impact to convert the message into a meaningful translation and context for the individual receiving, or not at all as the case may be. The continuum demonstrated in table 4.4.1 has been compiled by the author from a combination of foregoing literature.

Table 4.4.1: Continuum of Communication.

Explicit

Tacit

Hard data (IT based) organisation non-personal	Procedures, manuals either IT based or paper based organisational	Policies Written Correspondence Email Organisational/ departmental	Meetings , messages email interpersonal workgroups individual	Social semi formal smaller groups, individuals	Social informal Smaller groups, individual	Rumour, speculation story telling, legends history
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The continuum is intended to demonstrate different levels of communication with polarised concepts of hard technical information at one end of the scale and purely tacit at the other. This is not, however, intended to detract from the tacit elements of communication and thought that are implicit in all elements of communication but to highlight the difference. In this continuum, hard data refers to facts with limited scope for interpretation. All other categories on the continuum could be open to personal or contextual interpretation, and as the continuum moves to the tacit, the exchange of information and dialogue becomes more loose and intangible but not unimportant. Fineman and Gabriel (1996), for example, point out that 'story telling' is emerging as an important informal method of communication in modern organisations and is regarded as important to convey experiences of work whilst communicating shared knowledge and

learning and maintaining organisational memory (Schumacher, 1999). Smith and Irving (1997) highlight the importance of individual knowledge, organisational memory, intellectual content, and knowledge through teamwork and learning.

One significant area that relates to knowledge management generally, therefore, is communication and learning, and the role of people as possessors of knowledge. The whole concept of learning involves sharing and acquiring knowledge and from a sociological perspective, the interpersonal relationships that construct and convey meaning. Putting this in context, organisations consist of individuals and groups, which require management of complex relationships and processes that constitute or contribute to managing knowledge. Referring back to the idea of constructivist communication, to fully understand a message requires that the sender and receiver possess mutual mental models and any prior knowledge individuals possess will influence the process. Teams, however, can eventually develop a common understanding and shared knowledge, but communicating the team knowledge to those outside the team can be difficult. This raises two issues; first, operational management processes in relation to individuals in a social context, for example, Tobin (1996) points out that knowledge sharing will only be successful if the facilities and systems are easily accessible and easy to use. Second, the concept of knowledge management and complexity of communication appears to relate comfortably to the concept of systems and contingency strategic management (Mullins 1996, *see* 5.2). Knowledge management could be dependent on cross-organisational influences and interactions internally and externally, which sets the context in which knowledge is shared.

The relationship between managing knowledge and people can be difficult and contentious, because knowledge is still regarded as a personal rather than organisational commodity and is still associated with power, money and organisational politics. Eraut (1994) alludes to this when discussing the characterisation of the professional knowledge base. Eraut states “The power and status of professional workers depends to a significant extent on their claims to unique forms of expertise ... the less accessible to lay

understanding and the more individualised the client, the greater the power differential” (Eraut 1994, p 14).

The idea that organisations have knowledge is appropriate assuming that individuals remain with the organisation. However, when a member of staff leaves they take with them tacit knowledge and in some cases explicit knowledge if it has not been codified effectively. Tacit knowledge is difficult if not impossible to replace, because the individual’s contribution to the success of the organisation could have been unique to that person. Furthermore attempts to measure tacit knowledge require the organisation to understand the concept of what the knowledge is that they are looking for in the first place, for example Snowden (2000) states that about 90% of knowledge resides in the informal communities of an organisation and presents three associated heuristics:

- knowledge can not be conscripted but volunteered;
- we can always know more than we tell, after we have told it and after we have written it down;
- people only recognise what they know when they need to know it.

The foregoing puts to question the view that no one is indispensable, for example levels of dispensability may be different according to the amount of expertise and knowledge an individual has. If this knowledge is shared and transparent, then why would an individual volunteer that knowledge? Further to what extent do managers truly know what knowledge resides in their organisation and how this could be communicated effectively? These are challenges that should be considered when evaluating the readiness of an organisation to engage with knowledge management. With regard to explicit knowledge, if the organisation does not have appropriate codification and communication of explicit knowledge, again, problems emerge if the member of staff responsible for a particular area leaves and has not shared that knowledge. One approach that could be considered to address this could be found by considering knowledge management in the context of learning organisations.

4.5 Knowledge Management and Learning Organisations

Organisational learning has been described as a process by which an organisation gathers and uses new knowledge, with appropriate consideration for the tools, behaviours and values at all levels, and newly learned knowledge is translated into new goals, procedures, roles and performance measures (Bennis and Nanus 1985). Learning organisations, however, can mean different things to different people; for example one view refers to the organisation as a whole i.e. Senge (1990). An alternative view makes reference to all of the individual systems and subsystems of learning throughout the organisation. For example, Davis and Davis (1998) discuss learning in organisations that operate in fast changing environments, focussing on the importance of learning, conceptualisation of training and development and maximisation of learning. Senge (1992) introduces the concept of the learning organisation being that of a collective capacity to learn at all levels of the organisation rather than a top down directive for individuals to act on specific orders. Such collective learning requires trust and interdependency among teams with individual strengths compensating for individual weaknesses. Senge (1992) explains the difference between learning organisations and traditional organisations through five main principles:

- systems thinking which is events and actions that influence each other beyond individual learning horizons and the awareness that decisions can impact right across the organisation, both present and future. In addition there is understanding about individual ability to change working patterns to improve the organisation;
- personal mastery which relates to the level of proficiency and in this case individuals are usually committed to lifelong learning to clarify and deepen personal vision, developing patience and seeing reality objectively;
- mental models which are “deeply engrained assumptions, generalisations ... pictures or images that influence how we understand the world and how we take action” (Senge 1992, p8). To work effectively with mental models requires increased self awareness of our internal pictures of the world and to carry on

“learningful conversations that balance inquiry and advocacy, where people expose their own thinking effectively and make that thinking open to the influence of others” (Senge 1992, p9);

- building a shared vision which requires leadership in an organisation that binds people together and establishes a common identity and sense of purpose. This involves revealing or converting shared pictures of the future to cultivate positive commitment rather than reluctant compliance;
- team learning which requires effective communication i.e. dialogue and collective thinking because collective intelligence exceeds the intelligence of individuals in the team. The skills to achieve such team working include recognition, respect, trust and confidence.

Comparing Senge’s five principles to Quinn et al, (1996, p72) synergy can be seen in relation to knowledge types:

- cognitive knowledge which is the basic mastery of a discipline and relates to personal mastery;
- advanced skills, which are beyond book learning into practical execution and could be connected with mental models;
- systems understanding which is a deep knowledge of cause and effect, the ultimate expression of which is intuition. Again this could be linked to mental models and that which is beyond the ‘learning horizon’;
- self motivated creativity which is the will and motivation to succeed.

Quinn et al’s typology of knowledge however does not include management approaches that would build a shared vision and strengthen team work, both of which influence knowledge sharing.

Management in learning organisations differs from management in traditional organisations; for example, common management practice in traditional organisations looks outward and relates to practical skills (Jack 1999). Management in learning

organisations focuses more on how individuals think, what they truly want and how they interact and learn with one another. (Senge 1992). Learning provides the opportunity to create and recreate, change one's external perception of the world and relationship with it and extends individual ability to be creative. Senge (1992) states that there are two aspects to this: "Adaptive learning" which is about survival and "Generative learning" which enhances one's ability to create. The ability of the learning organisation to draw out and retain knowledge is determined by the organisational structure and culture, and the ability of its people to recognise what they know and the way(s) in which they know. Cohen and Levinthal (1990) discuss absorptive capacity' which is the individual recognition, sharing and assimilation of knowledge. The ability of individuals to absorb knowledge collectively impacts at an organisation level, however, decision-making processes and communication will determine how effective this is likely to be at an organisational level. Cohen and Levinthal (1990) state that organisations with a low absorptive capacity will have difficulties in managing their internal and external communications and knowledge flows.

Tobin (1996) discusses the knowledge network in relation to transformational learning, focussing on artefacts such as inventories of knowledge assets, i.e. data bases which provide the organisation with information about internal and external knowledge bases, learning resources and tools database, individual and group learning facilitation. With regard to group learning facilitation, Owen (1997, p16) states that "if the issue is the future of the corporation, and the people are willing to admit that they just do not know the answer, collaboratively they have a shot at creating a viable solution". Brown and Duguid, (1991) indicate that doing to learn, informal learning and sharing can contribute to the successful functioning of organisations, and may help maintain organisational memory and continuity.

The foregoing and previous sections highlight that organisations have various resources and capabilities, based around the individual and collective human resources and learning, with internal and external influences. Key issues to emerge include cross-organisational working in people and service-based organisations. The concept of the

learning organisation can provide individual and collective contribution to improve performance, engendering the trust and interdependency among teams to achieve higher outputs. This involves knowledge sharing from, and influences on, the workforce at all levels and experiences within the organisation and management recognition of the intellectual capital therein.

4.6 Intellectual Capital

The concept of intangible assets has become an important issue as organisations increasingly become knowledge driven. Research, development and innovation policies and education and training policies should include actions aimed to stimulate innovation, creativity and the competitive development of organisations through investment in intangibles.

Whilst traditionally, strategic management viewed organisations as a compilation of physical and human resources and systems, the main objective related to profit maximisation, however with the increase in service organisations and focus on human resources, human assets are now considered as a key resource. Since 1994, the European Commission (EC) has launched a series of studies, actions and projects that aim to better understand the knowledge economy and the importance of intangibles as competitiveness factors. One example of this was a workshop that took place in November 1999 Helsinki entitled "Intellectual Capital / Intangible Investments: How much is your business worth?" The main issues to arise were:

- industry is aware that knowledge management is a key factor for business value but at present there is a need for indicators to measure the performance of a company;
- this problem transcends all aspects of business management (accounting, corporate investment, disclosure of information and aspects of economic management, etc.), and needs to be tackled on an inter-disciplinary basis;
- it is very urgent to recognise at a policy level the need to invest more in

intangibles (research and development, innovation, training and marketing) in all sectors.

(Liikanen 1999)

Fundamentally, the EC tends to consider that policy makers should take stock of business evolution by defining new objectives and instruments for industrial policy. The ability to manage the intellect of human resources, including creativity and sharing of knowledge, has a direct impact on the maximisation of the organisation overall, not necessarily to be realised in the tangibles of the profit margin, but the overall market value of the organisation. Quinn, Anderson and Finkelstein (2000) highlight the importance of managing intellect to convert it into useful outputs. They define intellect as including:

- cognitive knowledge;
- advanced skills;
- system understanding and trained intuition;
- self motivated creativity.

Intellectual capital includes organisational and individually accumulated knowledge, ability, skill and expertise. Individuals, however do not necessarily possess the skills that incorporate everything, therefore the manager's challenge is to "fully understand how their actions affect other elements of the organisation or how to improve the total entity's effectiveness" (Quinn, Anderson and Finkelstein 2000, p 507).

Allee (2000) describes intellectual capital as including people, processes, structure and the customer:

- the customer represents external capital i.e. "relationships with customers, strategic partners, suppliers, investors and communities";
- human capital comprises the "individual capabilities, knowledge skills, experience and problem solving abilities that reside in people in the organisation";

- structural capital includes the “systems and work processes that leverage competitiveness, including IT, communication technologies, images, concepts and models of how the business operates, databases, documents, patents, copyrights and other codified knowledge.”

(Allee 2000, pp18-19)

From this perspective, managing knowledge should be on the strategic management agenda to achieve exceptional performance and sustainable competitive advantage and to use knowledge efficiently and rapidly rather than rely on particular products or technologies, which, although tangible, can be easily imitated. Intellectual capital is difficult to measure. Whereas physical assets are stable and consistent and can be accurately valued and depreciated, intellectual capital can not be accurately valued and can appreciate as well as depreciate, therefore physical assets provide a less complex system of valuation. It has long been recognised that the value of a company depends on a range of assets whose replacement costs cannot be easily calculated, for example the workforce. Traditional accountancy procedures differentiate between tangible and intangible assets, and intellectual capital represents all the assets of a company not represented on a balance sheet. Renewed emphasis on information or knowledge assets, intangible assets and intellectual capital has resulted in virtual companies achieving valuation many times over of their physical base.

Traditional accounting procedures are less able to account for production that includes knowledge capital, intellectual capital and intangible assets. This view is supported by Allee (2000, P29) “Our financial accounting systems do not illuminate diversity but drive toward conformity. Intangibles offer us the chance to profile, analyse, understand and appreciate the difference of one company from another.” To succeed this requires organisations to consider the value added elements of organisations within the social domain and such consideration is progressing. Harrison and Sullivan (2000) provide an update on current best practice and the evolution of intellectual capital management reporting on the values, roles and optimisation of intellectual capital. Liebowitz and Suen (2000, pp54-67) introduce knowledge management metrics for measuring

intellectual capital, recommending that organisations should undertake intellectual capital audits to “consolidate the knowledge management field and give the discipline further credibility”.

4.7 Conclusions

This chapter explored various aspects of knowledge management, establishing that business success, the new era of organisational forms and the continual changing environment require new approaches to management. The emphasis is now on adaptability, addressing market and customer needs proactively and a shift away from traditional, “permanently” structured organisations, to more fluid businesses. Knowledge management is seen as essential to the survival of organisations, to capture the creativity, sharing and utilisation of knowledge and expertise, that provides an organisation with competitive edge.

As was demonstrated in 3.3.3 and 3.4, communication is regarded as key to knowledge management, it is also an essential ingredient in many management theories, from an operational and strategic perspective. Improving technologies provide opportunities for increasing information exchange, but much organisational knowledge is tacit, and can not so easily be transferred electronically. The literature also assumes that organisations can engage and use the ideas behind knowledge management, but fails to consider the position the organisation is in. For example, as is often the case, communication should not be regarded as just electronic information exchange, but a dialectic and critical process. The critical discursive process distinguishes information exchange from knowledge sharing because the emphasis shifts from non-action to learning, understanding and consideration of variable solutions, which can impact horizontally and vertically throughout the organisation and require competent management of interrelationships.

The relationship between managing knowledge and people can be difficult and contentious, because knowledge is still regarded as a personal rather than organisational

commodity and is still associated with power, money and organisational politics. There are approaches, however, that may reduce some of the obstructions to sharing knowledge, which include the concept of intellectual capital or intangible asset management. The concept of intangible assets has become an important issue as organisations increasingly become knowledge driven. Research, development and innovation policies, education and training policies should include actions aimed to stimulate innovation, creativity and the competitive development of organisations through investment in intangibles. Intellectual capital includes organisational and individually accumulated knowledge, ability, skill and expertise. Individuals, however do not necessarily possess the skills that incorporate everything, or have the opportunity to express themselves. Management challenges, therefore, are changing in relation to teamwork, organisational structure, communication and collaboration and ability of the organisation to learn.

This research explores the foregoing issues further from a holistic critical perspective. A holistic approach to knowledge management requires broad consideration as discussion in this chapter demonstrates. Examples of issues include the need for a definition of knowledge management, because without a realistic and feasible vision, committed to by senior management, the organisation will not be able to create 'buy in' from the workforce to implement. Capturing current knowledge is important because unless the organisation has a structured and coherent approach to the capture, storing and sharing of knowledge then the concept of knowledge management remains ad hoc and it could be argued that it is not be managed at all. The right knowledge sharing culture is essential because any kind of framework can be introduced to an organisation, but if the culture of the organisation is such that cross organisational sharing and learning is inhibited, the framework is less likely to be successful unless culture is assessed. These are some examples of organisational type issues that could be considered in a framework to evaluate an organisation's readiness to engage with knowledge management.

The literature review, however, does not indicate any holistic underpinning theory as such and does not recognise the need for knowledge management to be treated as a strategic issue. Appendix 3 explores management and organisation strategy and structure

and reviews management development, traditional structures and culture in view of knowledge management. From appendix 3, it is evident that the development of organisational management theory is relevant to knowledge management. It is worth noting the advantages of systems and contingency, because of the recognition of influencing variables, ranging from the human to technical to environment. This helps demonstrate synergy with the concept of knowledge management and thus leads to considering the organisation as a system and reinforces the relevance of taking a systems approach to the development of a framework. Current management practice, however, is still very much classical, and this could be perceived as an obstruction to KM. A soft systems approach should help address this issue.

Appendix 4 discusses Soft Systems Methodology (SSM) demonstrating the depth of theoretical and methodological underpinning that a knowledge management framework can gain from SSM. The research focuses on human situations in a university in the context of knowledge management and as such is faced with social complexity, ill structured and strategic problem situations, therefore requiring a logical approach to investigation and intervention by way of a framework to evaluate a university's readiness to engage with knowledge management.

Emphasis is placed on the analyst to ensure appropriate participation and maintain the ethos of SSM in action. It also indicates the need for senior management commitment to the overall exercise. Initial casework undertaken in the University of Luton (chapter 3) highlights the need for senior management commitment and leadership as does the literature review into organisational management (appendix 3), again confirming the benefits of SSM.

SSM extends beyond the logical investigative process incorporating social systems analysis and points to a fully participative investigation. The focus of SSM in terms of outcome is based on learning to improve, holistic systems thinking, relationship handling and an action research paradigm. The holistic systems thinking identifies the component parts that may be meaningful to one level of a hierarchical system, but combined, they

contribute to the overall system and the dynamics within. Similarly, universities from a loosely coupled systems perspective, or systems and contingency perspective with multi variate interrelations can be considered in a holistic way. Considering the detailed discussion relating to SSM (appendix 4) and organisational strategies, structures and culture (appendix 3), figure 4.7.1 illustrates the structure of a potential framework:

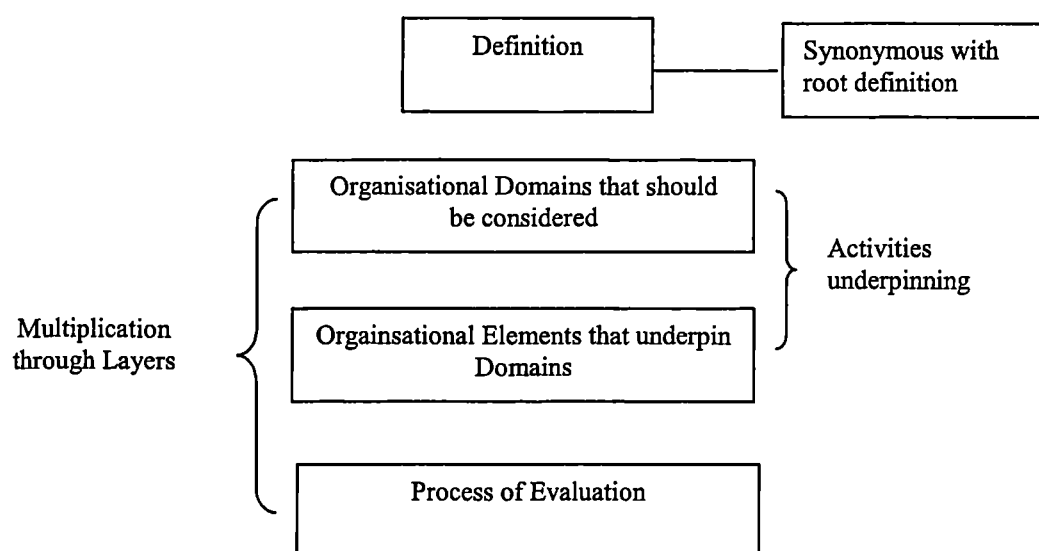


Figure 4.7.1: Potential Knowledge Management Framework Structure

Although some issues for consideration of the content of a framework have been identified through empirical research, in keeping with SSM some indication of current frameworks available is necessary to establish whether there already exists a framework that addresses KMR and to draw on good practice from previous work undertaken in this area overall. Chapter 5 therefore contains this exploration undertaken through desk top research.

5. A REVIEW OF KNOWLEDGE MANAGEMENT FRAMEWORKS

5.1 Introduction

This research is concerned with developing a framework for the evaluation of an organisation's potential to engage in knowledge management (an organisation's 'KM-readiness, or KMR). To recap, Chapter 3 offered background information and empirical evidence of issues that need to be considered in organisations, chapter 4 provided an overview of knowledge management, and appendix 3 explored organisational structures, strategy and culture in the context of knowledge management. Discussion thus far would not be sufficient to provide a robust and reasoned framework, therefore this chapter provides a comprehensive review of published knowledge management frameworks that purport to address evaluation, implementation, and other connected areas and is intended to accumulate some further and more focussed ideas as to what should be in a KMR framework. Figure 5.1.1 illustrates this next phase of research (phase 2) within which this chapter forms a substantial part.

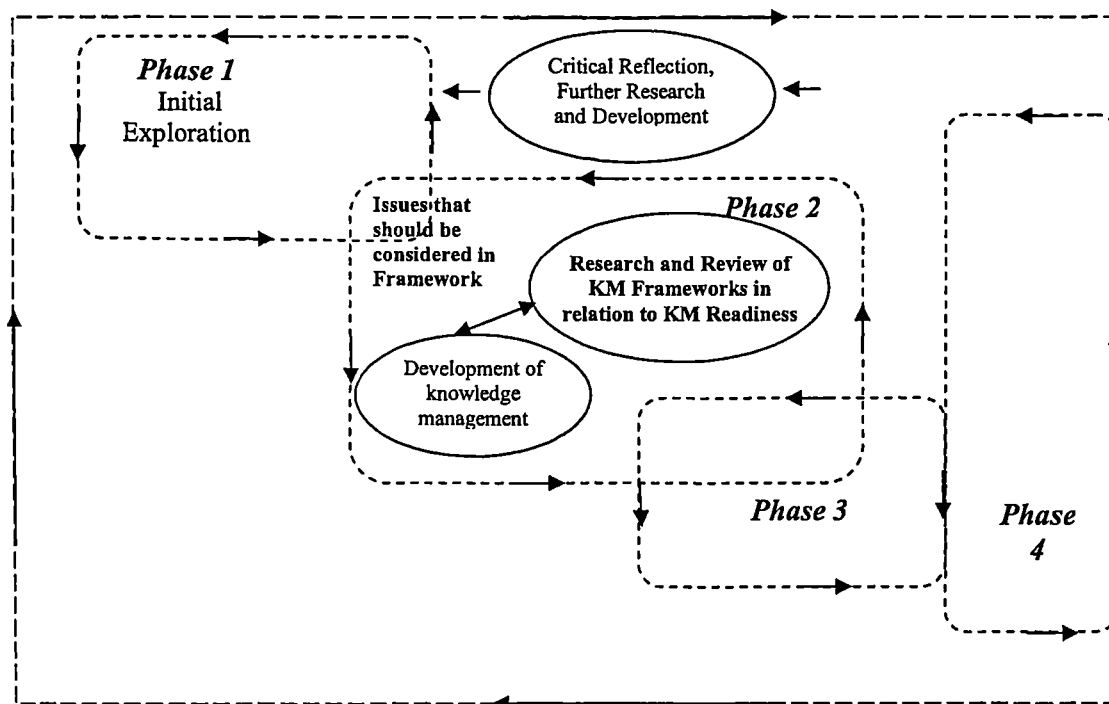


Figure 5.1.1 Research Design Phase Two (adapted from figure 2.2.1) - Review of Knowledge Management Frameworks.

Before continuing it is important to set this exercise in context. The review of frameworks is distinct from a review of literature in which the frameworks are presented. The latter is not intended here. For example, a review of a paper may involve a comprehensive critique, which includes exploration into the general area of research, clarification of the hypothesis, detailed examination of research methods and methodology, literature review, and comprehensive examination of data representation and quality. Such a review would consider the presentation of the paper, and it would critically reflect on the overall purpose of the paper and contribution made to new knowledge, either conceptual or practical. This review focuses solely on the frameworks presented in a paper and in particular those that may address evaluation of knowledge management in an organisation.

This review is important in two major ways, both of which form the key objectives:

- first, by showing that there is no single existing framework that addresses KMR, gaps in concepts and practice are highlighted. This helps to demonstrate that a new framework for the evaluation of an organisation's potential to engage in knowledge management will contribute to knowledge and the shortfall is clearly demonstrated in this chapter;
- second, the review highlights useful elements and concepts that ought to be in the framework being developed and this is also achieved.

Over 3,000 papers were found by means of the usual search methods. From these, based on titles, abstracts, and keywords, a total of 267 articles were identified as having potential relevance to this research. However, 107 of these focus solely on technology and technical aspects of information, and these were not considered suitable for the purposes of this research. The remainder of the papers were considered in more detail, and eventually 35 papers were considered to have frameworks of kinds that were worth serious evaluation.

The approach taken to this review is a qualitative interpretivist approach and as such specific issues require attention, such as reliability and validity. For example, Decrop (1999, p158) states that methodological introductions are “mostly limited to describing the research design or mentioning reliability and validity criteria, but without showing how these criteria are implemented”. In an attempt to address such issues, this approach has been structured carefully by establishing the criteria up front and offering as consistent, systematic, transparent, and valid a review as possible, involving a three-stage process:

1. the establishment of a set of key words to conduct the initial search;
2. an initial review of knowledge management frameworks and a process of elimination;
3. a systematic review of the remaining and most appropriate frameworks with the help of an evaluation grid that has been developed as part of this work.

5.1.1 How the establishment of a set of key words used to conduct an initial search was undertaken

There are many euphemisms that might be used for the word 'framework'. These include process, approach, method, methodology, procedure, system, scheme and structure amongst others. Similarly the word 'evaluation' has many alternatives, and frameworks that address implementation, for example, may have a lot that could contribute to the process of evaluation. In order to avoid missing relevant frameworks, a set of euphemisms and variants was developed for the literature search (see appendix 5). The literature search includes books, journals, conference papers, and web-based materials.

5.1.2 How an initial review of knowledge management frameworks and a process of elimination was undertaken

An initial review of knowledge management frameworks and process of elimination was conducted to maintain focus and to avoid lengthy reviews of frameworks that were clearly not relevant, or of frameworks that are so embryonic that there is little to review. For example, after a review it may be discovered that a framework is clear in structure, methodologically robust, theoretically and empirically underpinned. However, if it addresses only one aspect of knowledge management (such as technology for example), it offers very limited possibilities in terms of evaluating an organisation's overall potential to engage in knowledge management. The latter is the purpose of this review, and as far as it has been possible, only papers that address this area were selected for the next stage of more detailed review. Some approaches may be too simplistic or too theoretical and fail to offer a reasonable and coherent set of activities in any connected form that could be described as a framework (triviality criteria). Such papers were purposely excluded from the structured review.

5.1.3 How a systematic review of the remaining and most appropriate frameworks with the help of an evaluation grid that has been developed as part of this work was undertaken

Papers that presented a framework that focused on, or that contained associated concepts and elements that may be helpful in evaluating the extent to which an organisation is Knowledge Management Ready (KMR), and that did not fall foul of the triviality criteria (from 2 above), were subjected to a third level review. Such frameworks may not necessarily be designed explicitly, specifically, or solely to evaluate an organisation's KMR, but they appear to be directed toward assisting managers to evaluate their organisation's current situations and to suggest what might be addressed in order to introduce knowledge management into the organisation. This third level review is a systematic, structured and consistent process undertaken with the help of the Generic Review Grid shown in Table 5.2.1.

This grid has been developed as part of this research and forms a major part of the review. It is intended to help offer an easily comparable and accessible review that is as consistent, objective, systematic, transparent, and valid as possible. To achieve this, the categories against which the review is conducted are established up front and specific criteria, identified by Lincoln and Guba (1985, in Decrop 1999, p158) taken into consideration. Lincoln and Guba established four criteria that should be addressed when undertaking qualitative research:

1. credibility (internal validity): How truthful are particular findings;
2. transferability (external validity): How applicable are the research findings to another setting or group?;
3. dependability (reliability): Are the results consistent and reproducible?;
4. confirmability (objectivity): How neutral are the findings (in terms of whether they are reflective of the informants and the inquiry, and not a product of the researcher's biases and prejudices)?

Applying these criteria specifically to the grid, credibility (internal validity) has been achieved through the process of evaluation on an individual basis and according to each cell and the categories identified. Transferability (external validity) was introduced in two ways, first by iteration and comparing the outcomes of individual frameworks at a collective level within the scope of the overall review, which then provided more dependability, ensuring that the measures used were consistently applied in the broader sense. Second by exposing the grid and findings to critique at a workshop conducted at Lincoln University, (7 February 2003). Feedback during this workshop indicated that the grid could be applied to other types of research and the findings in this case seemed consistent and if undertaken by another could be reproduced as long as the objective remained consistent. Confirmability was addressed through iteration and by reviewing the overall exercise with external input from practitioners and critique at the KMAC conference Aston (2003). Discussion at this conference highlighted that it is impossible to achieve a totally objective approach because a professional bias has to be maintained to achieve the objectives of the exercise. However, it has been possible to reduce personal biases and prejudices achieving a more neutral approach than would otherwise be the case. The following section provides further detail of the grid and how it was used.

5.2 Generic Review Grid for Knowledge Management Frameworks

The left-hand column identifies elements that were considered when reviewing the frameworks and assists in understanding the structure of proposed frameworks and how they have been developed. The elements are purpose; process; activities; development and testing. These were established through an initial literature search to clarify the areas that knowledge management frameworks include and represent key significant strategic elements or concepts that would be expected to be found in most systematic approaches to knowledge management. Development and testing has been included because without appropriate development and testing, a framework may not achieve what it is intended for. The row headings help to evaluate the credibility and quality of the elements in the left-hand column that are considered in the frameworks and these are explicitness, clarity, reasoning, theory and empirical work.

Table 5.2.1: Generic Review Grid for Knowledge Management Frameworks

Score Key	1 = lowest possible score 5 = highest possible score				
Total Score	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	<i>Has the purpose of the framework been explicitly stated?</i>	<i>Has the purpose been discussed with clarity?</i>	<i>Is there reasoning to support the purpose of the framework?</i>	<i>Is there theoretical underpinning to support the purpose of the framework?</i>	<i>Is there empirical underpinning to support the purpose of the framework?</i>
Process	<i>Is the KM process explicitly stated?</i>	<i>Has the KM process been presented with clarity?</i>	<i>Is there reasoning to support the KM process?</i>	<i>Is there theoretical underpinning to support the KM process?</i>	<i>Is there empirical underpinning to support the KM process?</i>
Activities	<i>Are KM activities explicitly stated?</i>	<i>Have the KM activities been presented with clarity?</i>	<i>Is there reasoning to support the KM activities?</i>	<i>Is there theoretical underpinning to support the KM activities?</i>	<i>Is there empirical underpinning to support the KM activities?</i>
Develop & Test	<i>Is it explicit that development and testing has been undertaken?</i>	<i>Have the methods of development and testing been presented with clarity?</i>	<i>Have the methods of development and testing been reasoned?</i>	<i>Has development and testing been theoretically underpinned?</i>	<i>Has development and testing involved empirical evidence?</i>

The grid was applied by considering the frameworks being reviewed in the context of each cell and by cross referencing and asking the relevant questions, scores were then applied. Each individual cell is scored according to the extent to which the requirements of the cells have been met. The score key is based on a simple 1-5 Likert scale. A score of 1 shows that the specific cell was considered to be extremely poor in regard to the criteria indicated and a score of 5 shows that the specific cell fully met the criteria. The highest possible score per framework is 100, the lowest possible score is 20. It is important to recognise here that if this is to be conducted in a constructive and critical manner, then it is important to ask the right questions in each cell, as Ulrich (2003, p326) indicates “it is usually better to ask the right questions without having the answers than to have the answers without having asked...competence depends more on the questions we

ask than on the answers we find”. The following describes and explains the cells and applications in more detail.

Purpose

The purpose is to some extent self-explanatory because without purpose it is questionable as to why a framework would be proposed. By clearly stating the purpose of the framework, this ensures that the reader or potential user understands the overall objective.

Knowledge Management Process

There may be diverse approaches to knowledge management process and different terms used for example strategy, stages, system, and elements. Recent discussion on the ‘Knowledge Forum’ highlights this further (Husig, 10 March 03 Processes and Knowledge). Husig recognises that there are different understandings of the term process and explicitly defines knowledge management process as an integral part of the organisation’s business process. Knowledge management process is defined as the broad linkages within which knowledge management operates and has been selected to determine the extent to which a framework has been structured.

Knowledge Management Activities

Knowledge management activities are the actions that are taken within the process and here it was important to identify the distinction between process and activities, because the interchangeable use of the terms process and activity can cause confusion about the structure and layers within a framework. For example, as with knowledge process, activities may also be referred to in different ways, for example some frameworks may have strategy as the process, and processes as the activities. By exploring this further using the grid, helps to organise variable language about the frameworks into a logical structure for consideration.

Development and Testing

Development and testing is important in establishing the extent to which a framework has been developed and its readiness to be used following testing and validation. If appropriate testing has not been undertaken, the framework may not achieve what the author purports the purpose to be, and therefore remains conceptual or aspirational.

Explicitness

Explicitness explores the extent to which the different elements are presented intelligibly, so that the reader or potential user can distinguish what the framework's purpose is and the extent to which the elements have been clearly stated.

Clarity

Clarity relates to ongoing discussion about the different elements of the framework and measures the extent to which discussion is transparent and well structured; for example, this relates to how and where the elements of the framework might be used, which increases understanding, confidence and the ability to apply or adapt the framework independently and successfully.

Reasoning

Reasoning is intended to establish the rationale behind the chosen elements of the framework and measures the extent to which the elements have been discussed with justification and with effective use of literature. If well reasoned, the discussion about the framework answers how and why questions that users may have when attempting to understand the ethos behind a framework.

Theory

Theory may be drawn from any area as long as it is relevant and appropriate to provide principles of analysis or an explanation of the elements of the framework. If properly justified and referenced, theoretical underpinning can provide a more robust structure and foundation for each aspect of the framework.

Empirical

Empirical underpinning relates to the extent to which the elements have been compiled and tested by some form of evidence drawn from 'real world' experience. For example, survey research to consider what process or activities could be included, and the application of the framework to a given organisation to test fitness for purpose.

5.3 Frameworks Review

Abou-Zeid ES (2002)

Purpose

The purpose of this model is explicitly stated and discussed with clarity and reasoning to provide a basis for identifying the processes to be supported by any Knowledge Management Support System (KMSS). It was developed in recognition of a paradigm shift in knowledge management, which has been divided into three key areas:

- from regarding knowledge as a commodity to knowledge creation and recreation;
- from the management and technical approach to an enabling and social approach;
- from knowledge as being possessed by people to knowing, which is associated with acting and doing.

The model, known as the Knowledge Management Reference Model (KM RM) is intended to provide a comprehensive framework that transcends these three areas. The KM RM consists of a three layered approach to knowledge management systems in an organisation. The three layers are cognitive domains, functionality and resources, with an additional conceptual construct used to model the constituents of the functional layer. There is no reference to theory and empirical work at this stage.

Knowledge Management Process

The knowledge management process is made explicit and referred to within the three layers. The cognitive layer relates to the organisation's cognitive domain and all possible

relationships both internal and external. The external cognitive domain includes customers, suppliers, partners and competitors. The internal cognitive domain is the set of all things that relate to organisation and includes business purpose, processes, outcomes and rules.

The functional layer explicitly refers to knowledge management process and comprises two comprehensive categories. These are the knowledge manipulating process and knowledge enabling process. The knowledge manipulating process is described as the process that would lead to change in the current state of a 'K-thing'. Simply explained, a K-thing relates to knowledge that is, for example, identified or required by the organisation. The knowledge manipulation process includes activities such as knowledge identification, generation, elaboration, preservation, mobilisation, presentation, and evaluation. The knowledge enabling process relates to cultural and organisational issues and includes inculcating the knowledge vision, managing conversion, mobilising knowledge activists, creating the right context, globalising local knowledge.

Knowledge management resources include the organisation's ICT tools that support the knowledge manipulating and enabling process, however these have not been specifically included in the model. This illustrates the author's priority in relation to knowledge management, particularly because an explanation is offered indicating that technology should support and keep track of work, provide customised solutions for individuals and groups, and use language that relates to the organisational knowledge. In this sense it can be viewed as an enabling process or activity, which is dynamic and flexible to support knowledge manipulation. There is no indication of theory or empirical work in the establishment of process.

Knowledge Management Activities

Knowledge management activities are clearly referred to as the activities that underpin the process as indicated above. Additional examples in relation to the knowledge manipulating process include knowledge identification such as determining the

knowledge gap by comparing need with existing knowledge, assessing the knowledge and activity to convert it and identifying internal and external resources.

With regard to knowledge enabling processes, activities are made explicit, for example the process of cultivating or inculcating the knowledge vision, which includes activities such as developing mental maps of the environment in which the organisation exists and setting normative, operational and strategic goals.

There is no empirical evidence to underpin the choice of activities and no reference to theory.

Development and Testing

The KMRM has been developed based on a robust review of literature and varying approaches to knowledge management. There is some ambiguity in relation to development within a real organisation, for example, testing of the model seems to be a retrospective application in Matsushita's "Home Bakery", previously used as a case by Nonaka and Takeuchi (1995). The author does not indicate whether the case was revisited in reality or used conceptually, therefore it may be empirically weak. Although this appears to be a systems approach to modelling knowledge management, this has not been explicitly stated, nor is there any apparent theoretical underpinning.

Results and Conclusions

The author concludes that the proposed KMRM provides a basis for developing a hybrid descriptive and prescriptive model for knowledge management systems. The prescriptive element identifies knowledge processes and different ways an organisation can engage. The descriptive element offers an opportunity to characterise organisational knowledge and the connection between manipulating and enabling processes. The model achieves this understanding.

Summary

The purpose of this model is explicitly stated and discussed with clarity and reasoning using a broad review of previous and current knowledge management literature. The knowledge management process and activities have been clearly presented and structured. Although the authors appear to have taken a systems approach to knowledge management, this has not been explicitly stated, nor is there any theoretical underpinning. Use of the framework has been illustrated by application to a previous case study (Nonaka and Takeuchi, 1995). However, this is ambiguous in that there is no indication as to whether this has been undertaken retrospectively and is therefore conceptual, or whether the framework has been freshly applied in the present by revisiting the organisation and undertaking action research to test the framework.

This model contains a level of evaluation of the organisation in relation to knowledge identification by determining the knowledge gap between what exists and what is needed by the organisation. Although it does not address the organisation's overall readiness to engage with knowledge management it is useful to draw from this model when developing an evaluation framework.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 66	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	1	1
Process	5	5	5	1	1
Activities	5	5	5	1	1
Develop & Test	4	3	4	1	3

Achterbergh J, Vriens D (2002)**Purpose**

The model presented here is based on Beer's (1979) Viable System Model (VSM) which is applied to knowledge management to support the diagnosis, design and implementation of knowledge processes, and therefore provides the theoretical underpinning for this model. The purpose is clear in that the VSM is intended to make and maintain viable knowledge. The authors set the model in context by highlighting two specific areas that should be addressed in an organisation. The first is to establish what kind of knowledge an organisation needs to remain viable. The second is how to manage knowledge to address these issues. Although the purpose is clear, discussion is disjointed and it is not until after significant discussion that the reader or user deduces that the model is divided into three core elements, which illustrate the overall structure.

Knowledge Management Process

Three core elements that identify the structure and contain the process are:

- five functions that comprise the VSM;
- knowledge domains which contain activities to meet the requirements of the five functions;
- Knowledge processing which includes generating, retaining, sharing and applying knowledge.

The knowledge management process is referred to in the context of producing or processing viable knowledge and includes generating, retaining, sharing and applying knowledge. The process is cross-referenced, using a matrix, with the five functions of the VSM and associated activities (discussed further under knowledge activities).

Dependency diagrams are used to illustrate the relationship between viable knowledge and the knowledge process, highlighting where viable knowledge is generated, shared

and applied between functions. Management of viable knowledge is discussed which includes diagnosing the knowledge process to ensure that various elements are effective and efficient and whether the technological, social and infrastructure domains are suitable for processing viable knowledge. As indicated in the foregoing, theoretical underpinning is derived from the VSM. There is no indication of empirical work at this stage.

Knowledge Management Activities

The authors explicitly refer to knowledge management activities within the context of Beer's (1979) five functions necessary for organisational viability. Each function of the VSM is considered as an activity that requires knowledge as a background to solve a specific system related problem. This includes evaluation of performance and signals in relation to goals, perceived facts and gaps and the necessary action to achieve positive outcomes. The VSM is an iterative and layered model that deals with relations between functions and relations between different levels of iteration. Organisations are considered as social systems and communication links the five functions of the VSM. The five functions are:

- Organisational Primary Activities, which are the core activities of an organisation that demonstrate its main reason for existence. Each department or business unit of an organisation needs knowledge about organisational goals and other business units or departments goals. In this sense, the four functions that follow below ensure synergy of primary activities and a holistic approach to safeguarding the viability of the organisation;
- Co-ordination ensures that the interdependencies between primary activities are managed through planning, quality standards meetings and so on and knowledge about business units or departments is needed to evaluate the loss of performance;
- Control relates to the current goals of the organisation and includes activities such as monitoring whether the goals are achieved through direction to and reports from managers and auditing procedures, and reviewing new proposals to assess the potential for change;

- Intelligence ensures that the activities of the organisation are aligned with environmental developments and is based on knowledge about the environment including trends, changes or other initiatives that could be adapted to meet new organisational goals;
- Policy relates intelligence to control ensuring that the organisation defines its identity in such a way that fits developments in its environment. This includes activities such as reviewing new proposals for innovation and balancing discussion about adaptations necessary to achieve results.

As indicated theoretical underpinning is derived from the VSM and there is no indication of empirical work at this stage.

Development and Testing

Development of the model is clear and well reasoned. The authors review knowledge management concepts, processes and instruments and definitions of knowledge and apply Beer's (1979) VSM relating this to domains of viable knowledge using a case study to demonstrate the application of the model. Through the case study, the authors illustrate how the application of the VSM can organise and define activities to establish a system of knowledge management. Empirical work is limited to one company and there is no methodology to explain how the VSM was applied to the company. Descriptive examples are offered, with little analysis of the empirical work.

Results and Conclusions

The authors conclude by highlighting what the model is capable of achieving in terms of managing viable knowledge and draw out the benefits and importance of a systems approach using the VSM. They emphasise that by using the VSM provides a theoretical contribution to knowledge management. The model is regarded as generic and can therefore be applied to any organisation or organisational goals.

Summary

The purpose of this model is clearly stated, and theoretically underpinned using the VSM. The functions and activities in the model are well reasoned and dependency diagrams help to illustrate the relationship between functions and knowledge process. The knowledge process is clearly stated, as the actual management of viable knowledge rather than knowledge management, in other words the knowledge that is needed to maintain the viability of an organisation. In this sense the model seems to have less emphasis on knowledge management and more on organising and deciding what knowledge needs to be managed and the knowledge required to actually manage, using the five functions to achieve this.

Development of the model is based on a review of knowledge management literature. Empirical work and testing is undertaken using a case study based on an ICT company, however there is no actual reference to the company. In relation to an organisation's Knowledge Management Readiness, this model provides an excellent example to consider evaluation that could be undertaken based on the 5 functions of the VSM and associated activities and demonstrates that a systems approach provides a robust underpinning to knowledge management. The model proposed here considers organisations as social systems and refers to the importance of communication, but there is no reference to influencing factors such as power, politics and complexity of communication.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 82	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	5	3
Process	5	4	4	5	2
Activities	5	5	5	5	2
Develop & Test	4	3	3	2	5

Arora R (2002)

Purpose

The purpose of this framework is clear and is based on the Balanced Score Card to align management processes, introduce performance measurements and focus an organisation to implement knowledge management. The author establishes the context by highlighting concerns that managers have in managing and institutionalising knowledge and recognises the need for a structured and systematic approach. The authors assert that successful facilitation of knowledge management in this respect requires a long-term strategy with a clear vision, objectives and approaches that focus on the human side and culture change more so than technology. There is no evidence of empirical work or theoretical underpinning to support this framework.

Knowledge Management Process

The authors explicitly highlight the knowledge management process, through three main objectives, which are knowledge exploitation, innovation and skill enhancement. Each objective is broken down further. With regard to knowledge exploitation the author

highlights reasons for inefficiency and some proposals to rectify these. Knowledge innovation is discussed in the context of communities of practice, and in relation to skill enhancement, the author suggests some activities such as job rotation, and communication to improve competence. Overall the author proposes that the Balanced Score Card provides a process to identify parameters and monitor knowledge management. The Balanced Score Card provides four perspectives that are considered, which are the financial perspective, the customer perspective, learning and growth and the internal business process. Essentially this is the application of the Balanced Score Card as a financial management process and there is no reference to theory or empirical work.

Knowledge Management Activities

Knowledge management activities are indicated through generic parameters that reflect the progress of knowledge management. These primarily relate to different types of communication such as discussion, communities of practice, feedback, team-based activities and collaboration. The author also includes codification, products that have been introduced and measurement of intellectual capital, recognition and reward.

The author presents a matrix to show examples of how the Balanced Score Card can support an organisation to align its management processes and focus the organisation to implement them. The author asserts that it provides a performance measurement system, structured in a way that may lead to a least resistant path and places the main emphasis on people. Although this is logically discussed and makes practical sense it appears to be less about knowledge management and more about a general financial management approach. There is no empirical work or theoretical underpinning that would validate the approach.

Development and Testing

The development of this framework is based on the author's own perspective. There is no evidence of benchmarking or feedback in relation to development and there is no indication of testing.

Results and Conclusions

There are no specific results and no conclusion. The author finishes by recommending the next steps that can be taken when implementing the framework and asserts that the Balanced Score Card provides a framework for implementing knowledge management.

Summary

This is a practical discussion and conceptual application of the Balanced Score Card to general knowledge management in an organisation. The purpose is clear and discussion progresses in a rational and logical manner, however there is little evidence to support whether the approach chosen is appropriate or that the Balanced Score Card would make the impact suggested by the author, because there is no empirical work to substantiate this. There is no evidence of theoretical underpinning and the knowledge management process and activities have been selectively applied to the Balanced Score Card, rather than a robust discussion about what knowledge management is, followed by discussion as to whether the Balanced Score Card could be adapted.

Despite the foregoing, this framework contributes to a potential evaluation framework for knowledge management, because with further empirical work and theoretical underpinning, a Balanced Score Card may provide an effective tool to progress an organisation to shift the emphasis from accountancy based on tangible, easily measurable items to more intangible and value driven performance measures.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 39	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	3	1	1
Process	2	2	2	1	1
Activities	3	3	3	1	1
Develop & Test	1	1	1	1	1

Balasubramanian P, Kumar N, Henderson JC, Kwan MM (1999)

Purpose

The purpose of this framework is initially unclear, and as discussion unfolds, it eventually emerges that the purpose is twofold. The first aspect of the purpose focuses on a framework entitled 'Knowledge Mill', which is intended to describe the knowledge management process. This is then underpinned by a schema for modelling and leveraging knowledge elements in the specific context of decision making to implement process knowledge within an organisation. Implementation is undertaken using a software package called 'Thoughtflow'. Discussion is ambiguous and unstructured resulting in the reader having to decipher the exact purpose. There is no theoretical underpinning and empirical work is limited to one case study.

Knowledge Management Process

The authors define knowledge management as a community capability to share knowledge that creates value for the organisation and its customers, within which the knowledge management process is referred to. For example, to deliver capability the

authors identify operating drivers, which are technology, organisation and processes. Technology relates to the knowledge management system. Organisation is the relationship with other firms, the culture and internal management structure and knowledge management processes are initially explicitly defined as procedures, workflows, management controls and human resource management within the context of capability as indicated above. The authors continue to explain that their approach is split into two parts. The first is a goal oriented modelling schema, which is centred on decision making. This is intended to enable the organisation to define its knowledge objects, find and organise information, store and re-use. The second is the Knowledge Mill framework, which describes the activities that are performed during the conceptualisation, design, development and use of knowledge management applications. There is no reference to empirical work or theoretical underpinning to validate this approach

Knowledge Management Activities

The authors identify activities within the Knowledge Mill framework, which begin with senior management decision making to identify the goals of the application system and continue to include capturing, transforming, classifying, maintaining, discovering and disseminating knowledge.

These activities are referred to as a set of primary activities that need to be performed for all activities in the knowledge management process. The following offers more detail:

- Capturing brings together data/ information including experience and lessons learned from inside and outside the organisation;
- Transformation relates to validation and contextualisation of information so that it is easier to access;
- Classification includes indexing, filtering and linking new information;
- Maintenance relates to content and technical support using IT;

- Discovering identifies information from the knowledge base to make recommendations to different stakeholders in the organisation;
- Dissemination determines how people gain access to the content.

The authors proceed by discussing technical aspects of software deemed appropriate to support the knowledge management process and discuss the process of decision making and its cognitive elements including power and politics. There is no further discussion about this, and no theoretical or empirical underpinning to support the assertions made.

Development and Testing

Development and testing is undertaken through a case study exercise and primarily focuses on the technical aspects of the process. The software 'Knowledge Flow' is applied to strategic planning and deployment and the authors clearly state that the next step will be to undertake qualitative evaluation with users through interviews. At this stage, therefore, testing is incomplete and although the authors refer to empirical work in the development stages vis a vis the case study, they do not discuss the approach taken any further.

Conclusions

The authors conclude by highlighting further work that is necessary to develop the framework and goal oriented schema. They state that from evaluation and lessons learned the intention is to develop a methodology for designing knowledge management systems, but there is no methodology as to how the evaluation was undertaken. The authors recognise the complexities of power and politics in relation to decision making and highlight that a purely rational approach that ignores the subjectivity, personal and organisational dimensions is doomed to failure, and propose that a framework that gives consideration to these issues is more realistic. In this sense they propose that their framework considers this, however there is inadequate reasoning in the discussion to

support this conclusion. There is no clear theoretical underpinning to support the framework, and empirical work focuses mainly on technical aspects.

Summary

The purpose of this framework is initially unclear, and as discussion progresses it emerges that the purpose is twofold. The authors introduced a framework, 'Knowledge Mill' which is descriptive and an underpinning schema for using software, which is based specifically on capturing and organising knowledge around decision making. They discuss the cognitive elements of decision making highlighting the complexities of power and politics, but there is inadequate discussion and no theoretical underpinning. Overall discussion about the framework is confusing because of the interchanging use of terms relating to process and processes that underpin the process. With the exception of discussion about the software, it is difficult to visualise the nature of the framework being proposed here. There is no explicit reference to theoretical underpinning and a case study scenario is used to apply the framework, the emphasis is mainly on technology. In regard to an evaluation framework, this example explicitly indicates the importance of considering power and politics, though offers no further discussion or guidance.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 50	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	4	3	2	1	3
Process	5	3	2	1	3
Activities	5	2	2	1	3
Develop & Test	3	2	2	1	2

Bhatt GD (2002)**Purpose**

The purpose of this framework is clear and is intended to explore the differences between individual and organisational knowledge and how individual knowledge can be transformed into organisational knowledge. A review of knowledge management sets the context in which the author presents this framework providing clarity and understanding of what the author is attempting to achieve. Use of literature is limited and there is no theoretical or empirical underpinning.

Knowledge Management Process

The distinction between process and activities is not made clear. In general the author argues that it is through organisation including procedures, information, rules and ideas that knowledge is realised and knowledge management is defined as a process of facilitating knowledge. The process includes two approaches, the first being the relationship between individual and organisational knowledge and the second relates to knowledge management strategies. Each approach is discussed, logically reasoned and visually illustrated. Both provide a continuum of the process from individual to formal knowledge management and an underpinning strategy to manage this. In addition the author makes the distinction between independent and inter-dependent interactions, and the nature of tasks between routine and specifiable, and non-routine and non-specifiable. There is no reference to theoretical or empirical underpinning for the knowledge management process and because each approach is referred to as a process, this can cause some confusion in attempting to understand the structure.

Knowledge Management Activities

The author does not clearly and explicitly identify knowledge management activities within the process, but refers to learning, diverse tasks and the use of information systems such as Internet, Intranet and extranet. Again there is no reference to theoretical or empirical underpinning.

Development and Testing

This framework has been developed through discussion and reference to literature. There is no indication of empirical research and testing of the framework.

Results and Conclusions

There are no specific results and the author concludes by emphasising the importance of creating organisational knowledge through individual interactions and the importance for management to provide the right environment to achieve this. There is no further discussion or indication of how management might achieve this.

Summary

The purpose of the framework and subsequent discussion is clear however the author does not distinguish between knowledge management process and activities, but uses these terms interchangeably, with emphasis on process. The main focus is on the transfer of individual to organisational knowledge and this clearly reasoned. There is no explicit theoretical underpinning or empirical research, with the exception of reference to literature to justify the author's perspective. There is no evidence of testing, therefore this framework remains conceptual. The main contribution from this framework is the recognition of the continuum within which knowledge is transferred from individuals to the organisational level, and in terms of evaluating an organisation's readiness for

knowledge management, this continuum may already be in place, but not necessarily made explicit in the business process.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 41	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	1	1
Process	3	3	3	1	1
Activities	2	2	2	1	1
Develop & Test	1	1	1	1	1

Binny D (2001)

Purpose

The purpose of this framework is clear and is stated as being a framework intended to assist organisations in balancing their knowledge management focus and establish and communicate their strategic knowledge management. This includes two main aims, the first is to review the diverse knowledge management literature and provide a framework for the discussion of knowledge management, which is intended to minimise confusion and assist in planning and investment in knowledge management in organisations. The second main aim is to provide a checklist of knowledge management applications and technologies, which can be used to evaluate an organisation's current level of knowledge management, related activities. Entitled the knowledge management Spectrum (KM Spectrum), it is also intended to provide understanding of the range of knowledge management options, applications and technology. The idea to develop the

KM Spectrum has arisen from the author's previous experience of working with executives and strategists who are attempting to engage with knowledge management, and in this sense provide general empirical work. There is no theoretical underpinning to support the purpose or any other aspect of the framework.

Knowledge Management Process

The authors divide knowledge management into six main categories, which can be viewed as the process. The six categories termed 'Elements' are:

- transactional knowledge management, which refers to the application of technology, for example, customer services applications, order entry applications;
- analytical knowledge management is the interpretation or creation of new knowledge from various sources of materials and data, and includes, for example, data warehousing, data mining;
- asset management, which focuses on processes associated with the management of knowledge assets, for example, intellectual property, document management. This involves two key areas, which are explicit knowledge assets and processes relating to identification, exploitation and protection of intellectual property;
- process based knowledge management covers codification and improvement of processes or work practices, procedures and methodologies;
- developmental knowledge management focuses on increasing the competencies or capabilities of the organisations' knowledge workers. This covers transfer of explicit knowledge through training, and the development of tacit knowledge through communities of interest and engendering a learning culture;
- innovation/creation knowledge management concentrates on providing an environment in which knowledge workers can come together in teams to collaborate in the creation of new knowledge.

Developmental, innovation and creation appear to be one and the same as both involve collaboration and learning from which creativity emerges. The author does not

adequately explain why these have been split into different categories. It is indicated that empirical work has been drawn from the authors' personal experience of working with organisations. There is no theoretical underpinning.

Knowledge Management Activities

Apart from the reference to the activities indicated within the elements referred to in the foregoing, knowledge management activities are not explicitly discussed. The author does, however, highlight that existing knowledge management activities need to be acknowledged, understood and considered when developing strategies and plans, but makes no further reference to them.

Development and Testing

Development of this framework is based on the author's experience of working with executives and strategists. Whilst the author states that the framework has been developed with executives, this has not been substantiated with real evidence or references. In addition there is no evidence of testing the framework and no theoretical underpinning.

Conclusions

The author concludes by emphasising that the purpose was not to establish what knowledge management is, but to ensure that all available approaches, applications and technologies are considered.

Summary

The purpose of this framework is clear and discussion progresses with clarity and reasoning. There is no theoretical underpinning and no indication that the framework could actually achieve what is intended, because it does not appear to have been tested

empirically. The framework may offer practitioners guidance and a categorisation of approaches about what might be available to consider in relation to knowledge management. The knowledge management process provides the main focus and knowledge management activities are not explicitly referred to. Neither process nor activities are underpinned by theory and empirical work has been drawn from the author's experience of working with strategists and executives, however, there is no methodology or constructive approach.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 39	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	4	4	1	3
Process	4	3	2	1	2
Activities	1	1	1	1	1
Develop & Test	1	1	1	1	1

Bolloju N, Khalifa M, Turban E (2002)

Purpose

The authors introduce an approach for integrating decision support and the knowledge management process using knowledge discovery techniques. They present an integrative framework for building enterprise decision support environments. The context in which this framework is introduced is based on decentralised decision making and the requirements of decision-makers to combine different types of data and knowledge (both tacit and explicit) available in organisations. The purpose is ambiguous in that further into discussion, the authors then state that they are introducing two frameworks. The first

is for developing enterprise decision support environments as initially highlighted; the second is for conducting research in the fields of decision support and knowledge management. The second framework, however, does not appear to be explicitly referred to from this point onwards. There is no reference to empirical work throughout, and theory is specifically drawn from decision support.

Knowledge Management Process

The knowledge management process is referred to in relation to decision making, however the main focus is more on the decision making process. Reference to knowledge management process is limited in that the authors categorise knowledge into general domain knowledge, organisational knowledge and problem specific knowledge and how this knowledge is necessary to support decision-makers. They continue by focussing on the knowledge creation process and using Nonaka's (1994) model of knowledge creation, which includes socialisation, externalisation, combination and internalisation, which they then apply to decision making. The authors propose that the integration of decision support and the knowledge management process has three characteristics that facilitate knowledge conversion through automated techniques. These are:

- the application of knowledge discovery techniques for knowledge externalisation;
- the employment of repositories for storing externalised knowledge;
- the extension of knowledge discovery techniques.

The authors do not fully discuss and reason the connection from a knowledge management perspective but from a systems modelling and decision support perspective, nor do they provide empirical work to support the three characteristics chosen. The concept of the knowledge process deteriorates as the model unfolds because in describing how the model will operate, the authors appear to consider tacit and explicit knowledge in the same vein as data and information. In this sense, they seem to have disregarded the

complexity of tacit knowledge, despite using Nonaka's (1994) knowledge creation model.

Knowledge Management Activities

Knowledge Management activities are not explicitly referred to.

Development and Testing

The development of this framework has been undertaken based on decision support systems, and the application to knowledge management is weak with very limited reference to knowledge management literature. This is reflected in discussion and is demonstrated by a superficial level of understanding about tacit and explicit knowledge. There is no indication of empirical work to test this framework.

Results and Conclusions

There are no results and the authors' conclusion is weak with assertions made about how the framework will assist decision-makers, in addition there is no indication of testing to justify this. The authors highlight implications for research, which is primarily based on modelling and IT, and decision making.

Summary

The purpose of this framework is a little ambiguous because the authors refer to two frameworks and produce one, which purports to provide an integrative approach to decision making and knowledge management. Clarity of discussion and reasoning is weak and the outcome does not fully meet the initial purpose. The main focus is on decision making with little regard to the concept of knowledge management overall. The knowledge management process is referred to through integration with decision support systems, but this appears to be at a superficial level. Knowledge management activities are not included. Development is undertaken from a decision support systems

perspective and testing has not been undertaken. Theoretical underpinning is drawn from decision support systems, however the application of this does not address the overall concept of knowledge management and remains general. There is no reference to empirical work throughout. The contribution that this framework may make to an evaluation of Knowledge Management Readiness relates to the decision making process as one aspect and raises ideas about understanding in relation to why decisions may be taken, and in what context.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 31	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	4	3	2	4	1
Process	3	2	2	2	1
Activities	1	1	1	1	1
Develop & Test	2	1	2	3	1

Bower WD, Heminger AR (2002)

Purpose

This framework is intended to provide an overarching strategy to guide the identification and selection of knowledge management projects and as such is clearly stated. Although the purpose is clear, there is inadequate discussion and no evidence of theoretical underpinning. The framework has been subjected to a Delphi study, from which recommendations are presented to improve. However, although the criticisms of the framework are presented, the authors do not present improvements at this stage.

Knowledge Management Process

The knowledge management process is referred to as a six-step process to explore aspects of knowledge management and the selection of an appropriate knowledge management project. The six steps are to:

- analyse corporate strategic objectives using SWOT methodology;
- identify potential knowledge opportunities and limitations;
- identify and address potential knowledge management projects;
- identify and address knowledge management project variables affecting project implementation and success;
- identify and address factors for project variables affecting the successful implementation of knowledge management projects;
- finalise knowledge management project selection.

Within each step key tasks that need to be considered and decisions that should be made are highlighted. The knowledge management process is referred to generally, but it is not discussed in a structured manner with reasoning. The six-step approach referred to above appears to be more about project selection rather than a knowledge management process. There is no evidence of theoretical underpinning. Empirical work has been undertaken and is referred to in development and testing.

Knowledge Management Activities

Knowledge management activities are not explicitly referred to.

Development and Testing

The authors have referred to knowledge management literature in the development of this framework and indicate that empirical work has been undertaken through a Delphi assessment. They do not however, appear to have taken action based on the results of the Delphi assessment in this case, but indicate their intention to do so.

Results and Conclusions

The authors conclude by recognising the feedback and results that were received from the Delphi assessment. The feedback suggests that it is a viable framework for identifying and selecting knowledge management projects. Criticisms include comments such as:

- knowledge management is not a project;
- more attention should be given to organisational culture;
- consideration should be given to preparing for support of a project, including financial and human resources;
- more attention to maintaining flexibility;
- proposed customers of the project should be defined;
- a cost benefit approach to the exercise should be introduced.

The authors finally state that the next stage is to review and empirically test the framework.

Summary

The purpose of this framework is clearly stated and based on a literature review. There is no theoretical underpinning for any aspect of the framework. The knowledge management process is referred to in a general manner, with the main focus on the process of project selection. Knowledge management activities are not included. Empirical work and constructive feedback in the development of the framework has been

undertaken at this stage, and the authors identify areas for future improvement. The research undertaken in relation to the development of this framework provides a useful contribution to the development of an evaluation framework for an organisation's Knowledge Management Readiness by highlighting associated issues of consideration gathered through feedback undertaken through a Delphi assessment.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 41	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	3	3	1	3
Process	3	3	3	1	3
Activities	1	1	1	1	1
Develop & Test	3	3	2	1	3

Carneiro A (2001)

Purpose

The purpose here is explicitly stated to be the development of a conceptual model of knowledge management efficiency in organisations. The model is clear and reasoned, and is divided into two areas. These are technical tools for specification of intelligent systems resources and intelligent agents (people) who focus their roles on the organisation's performance. The model is developed based on a set of factors that justify the relationships among knowledge management efficiency, intelligent agents and technological resources. In addition the authors purport to develop a framework for the

roles of intelligent agents and technical tools in a conceptual knowledge management model. There is no reference to theory or empirical work to underpin this.

Knowledge Management Process

The knowledge management process is explicitly regarded as knowledge acquisition, use of technical tools and organisation of people, all of which contribute to organisational effectiveness. The model is presented as a sequential process with knowledge sources feeding into technical tools and intelligent agents both of which contribute to knowledge development and result in knowledge management and organisational efficiency. The dynamics and complexity of knowledge management is not demonstrated and there is no empirical evidence or reference to theory to support this approach.

Knowledge Management Activities

Knowledge management activities are not explicitly referred to.

Development and testing

Development of this model is based on a literature review and personal experience. There is no evidence of empirical work. The author emphasises the advantages that decision support systems and IT can bring to the effectiveness of the organisation and knowledge management. Although in each case, discussion is well reasoned and clear, the final conceptual model appears to be an after thought with no indication as to how the model operates or could be applied in an organisation.

Results and Conclusions

The author concludes by highlighting that the model needs to be validated through empirical work and that future research should explore specific areas such as the measurement of factors that affect intelligent agents and use of technical tools and

assessment of managers attitudes regarding the usefulness of strategic decision support systems and IT to improve knowledge management efficiency. There is no mention of the development of theoretical underpinning.

Summary

The purpose of this model is clearly stated as being conceptual and remains so, with no empirical evidence throughout. Discussion is presented with clarity and a certain amount of reasoning using literature to contribute to the overall development. The knowledge management process has been explicitly referred to as three key elements of the conceptual model but not discussed in any detail. Knowledge management activities have not been referred to. Emphasis is placed on decision support systems, however there is no further discussion, no theory in relation to decision support or knowledge management. This framework is a reasonable example and standard approach which does not contribute anything significantly different when considering an organisation's readiness to engage with knowledge management.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 42	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	1	1
Process	5	3	2	1	1
Activities	1	1	1	1	1
Develop & Test	2	2	2	1	1

Connell C, Klein JH, Loebbecke C, Powell P (2001)**Purpose**

The purpose here is the introduction of a Knowledge Management Consultation System (KMCS), in which the authors provide the characteristics of the structure and functioning of such a system. This is clearly stated, and a model of the KMCS and the purpose of the model is presented and discussed in the context of knowledge transfer. The distinction is made between knowledge, the need for knowledge and the carriers of these components, including the complexities of transferring tacit to explicit and tacit to tacit knowledge. The authors clearly state that the model has not been empirically validated and therefore remains conceptual.

Knowledge Management Process

The knowledge management process is made clear, with the emphasis of discussion on the process of knowledge transfer from person to person, and person to machine. The authors highlight weaknesses in the use of IT, and propose that the KMCS considers the organisational implications of a knowledge management system. Discussion is presented with clarity focussing on two key components of the KMCS- a human expert or computer that holds knowledge and a user with a need to consult the knowledge, each defining the other. The authors refer to the socio technical approach as an indication of theoretical underpinning, and point out that either way both components comprise one element of a socio-technical system. This incorporates explicit foreground knowledge such as facts, rules, formal heuristics and social norms, and implicit background knowledge, which are routine or instinctive, tacit and intuitive. The authors propose that the KMCS attempts to bring together the social domain and knowledge based systems to develop and integrate both with the same consideration in one process.

Knowledge Management Activities

Knowledge management activities have been referred to as the components of the KMCS and are clearly defined and categorised according to the type of action or activities within the overall process of consultation. These include the participants in different roles within a system, for example, those who are experts to be consulted and those who require knowledge.

The author asserts that participants within the system whether an expert or client have their own conceptual structures and definitions of the world which are carried out through social constructs from which rules are developed through social interaction. The consultation activity is, therefore, subject to interpretation, norms, values and beliefs and there is no guarantee of accuracy in any exchange. Although coherently discussed, there is no empirical work to support this perspective.

Development and Testing

The approach taken to development and testing of the KMCS has not been explicitly stated and appears to have been undertaken through discussion, reasoning and contribution from literature. There is no empirical evidence to validate the KMCS and there is no indication that it has been tested. It, therefore, remains aspirational.

Results and Conclusions

There are no specific results in relation to this framework, as it has not been empirically tested. The authors conclude by declaring that the KMCS could have implications for the functionality of computer based knowledge management systems.

Summary

The purpose of the KMCS is discussed in a coherent and balanced manner. In some areas, theoretical underpinning is drawn from literature to support ideas and discussion, however this is very limited and general, and there is no empirical work. The knowledge management process is discussed directly in relation to knowledge transfer and focuses on consultation between people, and between people and IT. Knowledge activities include communication only, and are referred to within the scope of the consultation. Although this is well reasoned and clear, the inadequacy of robust empirical and theoretical discussion in addition to the fact that no further development and testing have taken place weakens the system.

The main contribution that this system makes to the development of an evaluation framework is the distinction and interaction between people and IT, and the recognition that a socio-technical approach may be a relevant underpinning theory providing a more holistic view of knowledge management.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 51	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	2	1
Process	5	5	5	2	1
Activities	3	2	2	2	1
Develop & Test	1	1	1	1	1

De Gooijer J (2000)**Purpose**

This is a model of knowledge management for measuring the performance of knowledge management strategies for a public sector agency. Within the model, there are two frameworks, the first is intended to measure knowledge management performance and is based on a balanced scorecard approach. The second is a behaviour framework intended to identify the levels of practice demonstrated by individuals and is based on change management. The purpose is explicitly stated and discussion is presented with clarity and reason. The background and empirical work in relation to the development of the frameworks is based on a public sector organisation and the main issues that needed to be addressed in this organisation clearly presented. This provides context and understanding.

Knowledge Management Process

Three main approaches to the knowledge management process are referred to. These include:

- knowledge management map;
- Tacit and explicit knowledge transfer processes;
- Sensemaking as a key element in ICT.

There is no further discussion in relation to these approaches and the authors chosen approach is to use a knowledge management map, the elements of which the authors deem appropriate to meet the requirements of the case being considered. The elements include strategy, infrastructure, products and services, relationships, culture and behaviour, processes and content. There is an indication that this approach was chosen as a result of discussion and empirical research with the case organisation, but there is no methodology to demonstrate how this was achieved and no reference to theoretical underpinning.

Knowledge Management Activities

Knowledge management activities have not been included.

Development and Testing

Development of the model and frameworks has been undertaken through empirical work and issues raised in the case organisation in addition to a literature review. However although the discussion justifies the chosen approach, there is no discussion about alternative approaches that may have been considered and why they were rejected. The performance framework focuses mainly on the balanced scorecard with knowledge management concepts broadly applied to provide a knowledge management approach. The behavioural framework has been developed around change management and the sequences of behaviour that individuals will go through during the change process. There has been no empirical work or testing of this model and the two frameworks. Theoretical underpinning is briefly considered in relation to the behavioural framework only.

Results and Conclusions

The author concludes by recognising that implementation is still at an early stage, but does not indicate what implementation has taken place. In addition there is a final assertion made that the design of the frameworks provides an approach for hard business measures to be linked to soft social measures, but there is no indication of how these could be measured.

Summary

The purpose and discussion about this framework is clear, however reasoning in some areas of discussion appears weak. For example, the frameworks are each underpinned by logical approaches to performance measurement using a balanced scorecard approach in the first framework, which has been well justified. The second framework in relation to

management behaviour is underpinned by one theoretical approach in relation to change management. This choice has not been reasoned out. Development is specific to one public sector organisation and in this sense the frameworks are very focussed, particularly in relation to the approach taken. They have not been tested in the case organisation or beyond and therefore remain conceptual. This framework provides a useful contribution to evaluation through the knowledge management map and associated elements that comprise the process, i.e. strategy, infrastructure, products and services, relationships, culture and behaviour, process and content.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 48	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	3	2	4
Process	3	3	2	2	2
Activities	1	1	1	2	2
Develop & Test	2	2	2	2	2

Duru Ahanotu N (1998)

Purpose

This framework is explicitly and clearly presented, and is intended to demonstrate how production knowledge can support core competencies in manufacturing and balance the activities of production workers between creation and maintenance of knowledge and production. The author provides a comprehensive literature review and applies the principles and theories associated with learning and knowledge management to manufacturing processes. In doing so, the author challenges perceptions that place greater

emphasis on the importance of knowledge workers (e.g. those who design) over production workers, arguing that the skill of production workers is equally essential to learning and innovation.

Knowledge Management Process

The author refers to a continuum ranging from learning through action to innovation or creation, which he refers to as knowledge development in the manufacturing industry. Although he does not explicitly state so, the implication is that this is the knowledge process. Drawing on theories of learning, discussion continues and the author concludes by recognising that the iterative process of innovation, continuous improvement and translating these cycles into core competencies provides long-term sustainability for the organisation. This is a limited approach to the concept of knowledge management representing only one aspect. There is no evidence that empirical work has been undertaken.

Knowledge Management Activities

The author explicitly identifies three activities to improve the knowledge development of production workers, which should be balanced with the need to maintain product output. These are production/operations defined as all activities that directly manipulate a product, experimentation defined as the discovery of knowledge, which is separate from production/operations, and absorption, which is the acquisition of knowledge. The author continues by discussing these in more depth and highlights the importance of time for production workers to undertake these activities in a product cycle, identifying slack time as an opportunity to learn and innovate. Having established knowledge activities, the author categorises workers into two sections - core workers who have established expertise and are active seekers of knowledge who lead innovation and "peri core" workers. "Peri core" workers are sub divided into three types. The first are those who currently lack knowledge but will develop to eventually join the core. The second are those who are active innovators when required and the third are interested in specific

assignments only. The author continues by discussing the importance of cross-organisational working and communities of practice to ensure that diverse viewpoints are taken into consideration. This is a description of an organisational structure from a knowledge management perspective, there is no empirical work or theory to underpin this approach, nor is there reference to organisational literature to provide a reasoned discussion.

Development and Testing

Development of this framework is based on one aspect of knowledge management drawn from literature and applied to the manufacturing industry and is a description from the author's perspective. There is no empirical work to test the framework, therefore it remains conceptual.

Results and Conclusions

There are no specific results. The author concludes by drawing together discussion and pointing out that the framework is not intended to resolve issues. It presents methods to consider knowledge development and product creation for ongoing evolution of core competencies and highlight that production workers can successfully engage with the processes of creation, learning and innovation.

Summary

The purpose in this case is clearly stated, and discussion focuses on the recognition that all employees have something to contribute to learning and development in an organisation if given the opportunity. In this sense, the author's discussion is well reasoned with theoretical underpinning derived from theories of learning and learning organisations. The knowledge management process is identified in relation to learning by doing and innovation. Knowledge management activities are explicitly stated and discussed with clarity, but there is no indication of empirical development and testing.

When considering an organisation's Knowledge Management Readiness, the main contribution this framework offers is recognition of the need for horizontal and vertical participation and the contribution that every employee may have to creativity and improvement in the organisation.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 50	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	4	3	4	4	1
Process	3	3	3	3	1
Activities	5	3	4	3	1
Develop & Test	1	1	1	1	1

Escriba-Esteve A, Urra-Urbieta JA (2002)

Purpose

This is a conceptual framework, the purpose of which is to consider co-operative agreements or partnerships from knowledge and learning perspective and is clearly stated in this respect. Discussion is clear and sets the context and the authors provide contrasting views of knowledge management from a robust literature review, which is well reasoned to establish their own approach to knowledge management. The main focus from a knowledge management perspective is on learning and knowledge creation processes that take place in inter-organisational partnerships or alliances. Reference is made to learning theory, and there is no evidence of empirical work.

Knowledge Management Process

Learning and the knowledge creation process are explicitly and clearly discussed in the context of co-operative agreements. The knowledge creation process includes creation, transfer and integration of knowledge between companies. The authors provide a reasoned argument for using co-operative agreements to achieve superior performance specifically by focussing on the process of knowledge creation, rather than just the settlement of mutual gain. Learning processes are discussed as to what actually occurs within the co-operative agreements and is divided into two perspectives:

- learning to design and manage the co-operation as a strategic option;
- learning as a means of acquiring know how, skills, and competencies from another company to improve its own strategies and competitive advantage.

A distinction is made between individual, group and organisational learning and how individual learning relates to organisational, or group learning. Factors that may facilitate or inhibit learning and the knowledge creation process are recognised and discussed, with reference to theory. There is no reference to empirical work to validate this approach.

Knowledge Management Activities

Knowledge management activities are not explicitly referred to.

Development and Testing

Development of the framework has been undertaken from a robust literature review, underpinned by theory. Discussion is clear, well reasoned and balanced incorporating different perspectives and why the authors have chosen a particular approach. There is no evidence of empirical work and testing has not been undertaken, therefore as explicitly stated by the authors, this is a conceptual framework.

Results and Conclusions

The authors conclude by highlighting the benefits of this framework and future research that would be useful to unravel additional issues in relation to co-operative agreements. The importance of the learning process is highlighted as this may facilitate or inhibit the knowledge creation process and competitive superiority.

Summary

The purpose, development, discussion and reasoning in this framework are clear and are underpinned by theory and a robust literature review. There is no evidence of empirical work, therefore, the framework remains conceptual or aspirational. Knowledge management process is explicitly identified in relation to knowledge creation. Learning processes are discussed in relation to knowledge creation and the impact on co-operative agreements. Knowledge management activities are not referred to. This framework concentrates on the benefits and advantages that can be gained from mergers, which is useful from an evaluation perspective. This is also helpful to articulate the similar benefits that could be achieved from an internal merger of departments when evaluating restructure and an organisation's readiness to engage with knowledge management.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 60	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	4	1
Process	5	5	5	4	1
Activities	1	1	1	1	1
Develop & Test	3	3	4	4	1

Firestone JM (1999)**Purpose**

The purpose of this framework is clearly stated. The introduction embarks on a fairly complex definition of Enterprise Knowledge Management, Natural Knowledge Management System, Artificial Knowledge Management System and Distributed Knowledge Management System, with a brief overview of the interactions. The author then states the purpose as being an examination of the relationship between the Distributed Knowledge Management System and Enterprise Knowledge Management System. Discussion continues in a disjointed manner with assertions that are not fully reasoned with clarity. There is no clear reference to theory or empirical work. The use of technical language and acronyms impede understanding. The author produces a matrix that identifies knowledge and a knowledge management process, activities within the process and a Distributed Knowledge Management System. This matrix is useful and helps to provide some clarity.

Knowledge Management Process

The knowledge management process is explicitly drawn out in the context of Enterprise Models. The Enterprise Model is defined as a network of rules intended to explain and predict interactions in the organisation and its environment. The author states that knowledge management production processes produce enterprise models, and there are three high-level knowledge processes that can be modelled in Enterprise Models. These are knowledge production, acquisition and transmission. There does not appear to be any specific theory or empirical work to justify this perspective. The author continues by discussing each high-level knowledge process, explicitly identifying activities within each area.

Knowledge Management Activities

Knowledge management activities are clearly drawn out as activities to meet the requirements of the high-level knowledge process, though again there is no theory or empirical work. The author clearly illustrates the knowledge production and acquisition processes and discusses the associated activities further. With regard to knowledge production, activities include generating new knowledge, revising and refining existing knowledge and re-generating previously produced knowledge. Knowledge acquisition activities include gathering external data and information and knowledge, filtering it, testing and storing. The process of knowledge transmission includes knowledge sharing activities both IT based and human based.

Development and Testing

There is no indication of empirical research in the development and testing of the framework, and no theoretical underpinning.

Results and Conclusions

There are no results. The author very briefly concludes that the Enterprise Knowledge Management System is an improvement on the Distributed Knowledge Management System.

Summary

Overall it is difficult to follow what the author is attempting to achieve with this framework, partly because the author does not set the context, which is further exacerbated by disjointed discussion. This model is developed under the auspices of Enterprise Models, however because this paper does not have a natural flow and logical links between sections, it is difficult for the reader to follow the author's discussion and ultimately what is attempting to be achieved. The use of technical language and

acronyms appears to complicate what emerges as a fairly straightforward description of a knowledge management model.

Knowledge management process and activities are clearly stated and logically discussed from the author's perspective. There is no indication of theoretical or empirical underpinning, or testing of this framework. The main contribution is the discussion about different knowledge management systems.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 40	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	2	1	2	1	1
Process	5	4	3	1	1
Activities	5	4	3	1	1
Develop & Test	1	1	1	1	1

Gao F, Li M, Nakamori Y (2002)

Purpose

The purpose of this framework is stated as a new systematic perspective on knowledge and a toolbox for practical knowledge users, however, as discussion continues confusion emerges. A review of literature and exploration into knowledge theory informs discussion and development of the author's perspective on knowledge management. From this, the authors indicate that there is a softer trend in the knowledge management process, in addition to new technology such as the use of the web, information technology and expert systems.

Discussion becomes disjointed when the authors propose a new systematic perspective on knowledge, using critical systems thinking and soft systems thinking, which when applied to knowledge management is intended to provide a useful toolbox for practical knowledge users. Although a toolbox is provided, discussion in relation to development loses clarity because the author then refers to two sets of systems. The final outcome presents a framework that relates a proposed knowledge system to eight systems methodologies applied to different knowledge processes. The authors refer to this as being the tool kit, however there is limited discussion as to why each systems methodology might be appropriate and no indication of how this tool kit might be used in practice.

Knowledge Management Process

The knowledge management process is organised and defined by the authors in the first instance by separating the management of work process from the management of knowledge workers, to classify knowledge management into two dimensions, which are hard conditions and soft environments. This is clear and well reasoned out and the authors propose two sets of systems methodology to underpin these dimensions:

- the organisational knowledge system (explicit and cultural knowledge);
- the human being as part of an organisation and personal knowledge (explicit and tacit).

The authors define the organisational knowledge system or process as the management of existing knowledge, which includes developing knowledge repositories and knowledge compilation arrangements and categorisation. The human being as part of an organisation is defined as the management of specific knowledge management activities. There is no reference to empirical work, and theory is drawn from systems thinking.

Knowledge Management Activities

Knowledge management activities are explicitly stated and include managing knowledge acquisition, creation, distribution, communication, sharing and application. The authors propose that to sustain these activities it is important to create the right hard and soft environments, for example the hard environment relates to technology and the soft environment relates to people issues such as team work and the learning climate. The authors distinguish between knowledge objects and process, defining knowledge objects as entities that exist in their own right over time in a hierarchical system which includes data, facts, information, experience, learning and expertise. The knowledge is then used as a tool to underpin people's theoretical and practical work in the social organisational setting. Again there is no reference to empirical work to substantiate this approach.

Development and Testing

There is no indication of testing of this framework. With regard to development of the framework and theoretical underpinning, the authors' explicitly state the need for two sets of systems to underpin knowledge management. They propose that various systems methodologies enable knowledge to be applied systematically by employing soft systems methodologies generically or as a lens according to the knowledge management approach and methodology that demonstrates most synergy. Although initially the distinction between the use of two sets of systems methodologies is made, the application of various soft systems methodologies is applied in the final framework. At this stage, the paper loses clarity, because there is no specific focus and for the practitioner, no indication as to how to apply and use each methodology.

Results and Conclusions

There is no indication that this framework has been tested, therefore, there are no results. The authors conclude by asserting that this framework could be used as a whole or a lens to systematically apply knowledge. This includes, decision making, engendering

working relationships, facilitating knowledge sharing. There is no indication of how this could work in practice.

Summary

The purpose in this case is to provide a new systematic perspective on knowledge and a useful toolbox for practical knowledge users. As discussion unfolds, however, discussion loses clarity and the extent to which the purpose is achieved is questionable. Theoretical underpinning is drawn from the area of systems thinking, however because the authors refer to several different approaches in systems thinking, discussion remains at a general level. This does not provide the opportunity to understand and justify why a particular soft systems approach might be used at a particular point of the knowledge management process. There is no indication of empirical work in the development and testing of the framework, therefore it remains conceptual. Further, the authors intend this framework to be a toolbox for practical knowledge users, if, however, practical knowledge users do not have prior knowledge and understanding of each systems thinking approach, the purpose of the framework may not be achieved. This framework contributes a conceptual overview of systems thinking to knowledge management and indicates that such an approach may be an effective way forward in the development of an evaluation framework.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 43	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	4	2	3	3	1
Process	4	2	3	3	1
Activities	3	2	3	3	1
Develop & Test	1	1	1	1	1

Goh SC (2002)

Purpose

The purpose, introduction and discussion about this framework are clear. The author prescribes an integrative conceptual framework that links key factors in literature that relate to knowledge transfer. This includes managerial implications and organisational characteristics. The author reviews key issues that relate to knowledge transfer including organisational learning, technology to facilitate transfer, cultural issues and structure. Discussion is clear and presented with clarity, however it lacks depth remaining at a general level.

Knowledge Management Process

The author briefly distinguishes between hard organisational processes and soft people oriented processes. From the literature review, the integrative framework includes the process of leadership, problem solving/seeking behaviours, support structures, absorptive and retention capacity and types of knowledge. Each process is underpinned by a

description of approaches that would facilitate knowledge sharing and this is presented in a prescriptive manner, with no contrasting debate.

A summary of management approaches to achieve effective knowledge transfer is provided. There are many assertions made by the author with no theoretical underpinning or empirical work, and assumptions are made that an organisation will generally be compliant. This is despite a comment about power and knowledge, which receives no further consideration.

Knowledge Management Activities

Knowledge management activities are not explicitly referred to.

Development and Testing

This is a conceptual framework that has been developed from a review of literature, though it lacks depth and reasoning. Testing and associated empirical work has not been undertaken.

Conclusions

The author concludes by stating that the framework contributes to the elaboration and integration of some key factors that influence the knowledge transfer process and re emphasise the prescriptive approach presented.

Summary

This is a presentation of a knowledge management framework based on a literature review that focuses on aspects of knowledge transfer. The purpose and discussion is clear, however reasoning is weak with little contrasting discussion and overall a prescriptive approach. There is no overall research design and although theory is referred

to, this remains at a general level. Empirical work has not been undertaken. An important contribution that this framework may offer to the concept of an organisation's readiness to engage with knowledge management is the right Management approach and organisational design to facilitate knowledge transfer.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 37	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	3	2	1
Process	3	2	3	2	1
Activities	1	1	1	1	1
Develop & Test	1	1	1	1	1

Hatten KJ, Rosenthal SR (2001)

Purpose

The purpose of this framework is clearly stated, the intention of which is to integrate knowledge into corporate strategy. The authors state that the production of the framework has arisen from previous research which pointed to the need for practical frameworks to help corporate managers participate more effectively in strategy formulation and knowledge management processes. There is no referencing or evidence of this empirical work. However when describing how the framework could be implemented a retrospective view on several case organisations is offered, but there is no methodology or indication as to whether these form part of the research referred to. There is no evidence of theoretical underpinning.

Knowledge Management Process

The framework contains seven key tools, which are intended to assist managers in implementing the overall knowledge process. These are:

- Action Alignment Model - This focuses on the current strategy and associated operating activities and is a process for assessing the organisation's effectiveness and business processes through targeted knowledge management;
- Do/Contract Decision process - This relates external contracting and partnerships and the acquisition of new skills and abilities achieved through partnership;
- 3C Test - This is intended to test for strategic balance by assessing the feasibility of the current business strategy and in doing so considers the customer base, business process capabilities and organisational competencies (hence 3C). Organisational competencies refer to the 'know how' that already exists. Overall the 3C test is intended to provide an overview allowing for an integrative approach to understand strategic capabilities and competencies and identify any gaps;
- Strategic Stretch Test - This relates to the future of the organisation and new business opportunities. In this case the 3C test is used to compare future requirements to what is currently available. It then extends this to consider competitive advantage and external and internal stakeholders and potential constraints they may impose on the organisation. At this stage a strategic risk assessment is carried out and options for managing the decisions that may be taken;
- Review of Experimental Knowledge Gained - This includes learning in action and gaining knowledge to support subsequent decisions about opportunities to pursue. At this stage of the process the experimental knowledge from strategic business experiments is assessed;
- Performance Metrics - These relate to the choice of performance measures and systems to support this, for example setting performance targets;

- **Knowledge Ignition Process** - This relates culture and knowledge based behaviour to cycles of learning in action and essentially the establishment of a learning culture.

None of the foregoing processes are underpinned by theory, nor is there explicit evidence of empirical work.

Knowledge Management Activities

Knowledge management activities are referred to as specific actions that should be taken to meet the requirements of the seven-stage process. These are too numerous to repeat here, but suffice to say they comprise a list of practical actions which are clearly stated and offer an effective guide for practitioners.

One activity that has been clearly presented and differs from the standard knowledge/business process relates to the assessment of risk. The authors propose that once a new strategy has been provisionally decided upon, a risk assessment should be undertaken. The model to undertake this includes knowledge content according to the seven-stage process assessed against key aspects of an organisation, for example customers, competencies, country and currency, Chief Executive Officer. Guidance is offered as to how to implement this model. There is no evidence of empirical work or theoretical underpinning.

Development and Testing

There is no methodology to indicate how the framework was developed. Having established the framework, the authors apply specific stages of it retrospectively to several case organisations to justify how it could be beneficial. There is no indication that actual empirical work has been undertaken.

Results and Conclusions

There is no overall conclusion, but at the close of each chapter relating to aspects of the framework, the authors tend to conclude by emphasising the benefits of the framework.

Summary

The purpose of this framework is clearly stated, and discussion is clear, however reasoning lacks robustness. Assertions are made throughout, with poor referencing, weak use of literature, and no clear empirical work to test the framework and no theoretical underpinning. The knowledge management process and activities are explicitly referred to in a clear way and guidance offered about implementation. Generally, this framework provides a comprehensive and practical approach, which could contribute to the development of a framework intended to evaluate an organisation's Knowledge Management Readiness.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 52	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	2	1	1
Process	5	5	3	1	1
Activities	5	5	3	1	1
Develop & Test	2	2	2	1	1

Hlupic V, Pouloudi A, Rzevski G (2002)**Purpose**

The purpose of the framework proposed here is clearly stated for use in research into knowledge management. The framework is intended to provide a systematic and interdisciplinary approach to research in knowledge management through technical and hard; organisational and soft; philosophical and abstract perspectives.

Discussion is well structured and set in context by reviewing previous management approaches such as Total Quality Management and Business Process Re-engineering, in addition to knowledge management. The authors propose that in the past, too much emphasis has been placed on technology and inadequate research has been undertaken into people's experiences of the interaction between business and people, and technology factors. The authors explore what knowledge management is and recognise that although the benefits to organisations are clear, there is still confusion about what knowledge management means and literature is diverse with no agreed definition behind the term knowledge management. There is no explicit reference to theoretical underpinning or empirical work.

Knowledge Management Process

Drawing on knowledge management literature, the authors provide a unified definition of knowledge management identifying and emphasising people, technology and the interplay between both. A clear distinction is made between hard and soft aspects and comprehensive discussion is undertaken in relation to knowledge management processes from different perspectives. For example, the technical perspective includes tools, technology and processes. Human and organisational perspective includes organisational learning, business intelligence, culture, Human Resource Management and operational management. The ontological and epistemological and psychological perspectives include definitions of knowledge management and appropriate methods for investigating knowledge management phenomena.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 46	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	2	1
Process	5	5	5	2	1
Activities	1	1	1	1	1
Develop & Test	1	1	1	1	1

Holsapple CW, Joshi KD (2002)

Purpose

The purpose of this framework is to describe knowledge manipulation activities that may occur during the process of knowledge flow, termed by the authors as an episode. This is clearly stated and the authors propose that the framework can be used as a common language for debate about knowledge manipulation, and practitioners could use the framework to consider activities in relation to the design, measurement, control and support of an organisation's knowledge management episodes. The authors provide a robust methodology and empirical work in the development of this framework, but there is no overall theoretical underpinning.

Knowledge Management Process

Overall the authors state that the knowledge management process is directed and shaped by managerial influences, and facilitated or obstructed by environmental influences and organisational resources. Discussion is clear and well reasoned with the authors describing knowledge as a process by which an organisation's joint human-computer system changes the organisation's state of knowledge and produces outputs. They recognise the extent to which a system of knowledge management can be either complex or in some cases fairly straightforward, independent or interdependent. The term

knowledge episode is used to define the process of identifying knowledge need through to satisfying that need, or not as the case may be. This episode can be independent or interdependent with other episodes and will occur at any given time in an organisation. The authors provide a clear methodology, which supports this approach to knowledge management process, however there is no theoretical underpinning.

Knowledge Management Activities

Knowledge management activities are explicitly stated and the authors distinguish between elemental level and higher-level knowledge activities. Elemental refers to the knowledge cycle, for example sharing, creating, identifying, collecting, adapting, organising and applying knowledge. Higher level relates more to strategic approaches. This framework focuses on elemental activities and sub activities, which directly manipulate knowledge and produce knowledge flows within a knowledge management episode. Overall the framework concentrates on activities such as the acquisition, selection, internalisation and utilisation of knowledge in addition to the internalisation and externalisation of knowledge and generating new knowledge. This is broken down further by exploring the sub activities involved, for example, during the acquisition of knowledge, activities to capture include extracting, collecting, and gathering valid knowledge, which is then organised by distilling, refining, orienting, interpreting, packaging, assembling, and transforming. Transferring the knowledge includes activities such as communication channel identification, selection, scheduling, and sending. Internalising involves evaluating and valuing the knowledge to be internalised and identifying the knowledge resources that are to be impacted by the knowledge flow produced. The description of activities is clear and well reasoned using empirical work gathered through the Delphi process. There is no theoretical underpinning.

Development and Testing

Development and testing has been clearly stated and structured using the Delphi approach. This includes a combination of concepts, best practices and literature leading to an initial framework, which was then critiqued and evaluated by a panel of knowledge

management practitioners and academics. During the development phase, the authors carried out a comparative analysis of knowledge management frameworks, identifying various knowledge management activities, which confirmed for them the need for a generic framework of knowledge manipulation activities. During the preliminary phase evaluation criteria and standards were determined prior to starting development of the framework. Three boundaries were defined which were business, descriptive and detail. The business boundary focused on the development of knowledge management within business organisations. The descriptive boundary purely described knowledge manipulation activities in the process of knowledge management. The detail boundary was set as two levels, the first to identify basic knowledge manipulation activities at one level and their sub-activities at the second.

An iterative approach was used in developing the initial framework to account for notions of elemental knowledge found in a survey of literature, matching concepts, ideas, language and their inter-relationships which were compared, organised and unified in an inductive fashion over many iterations. The framework was empirically evaluated using questionnaires and feedback received from a panel of academics and practitioners.

Results and Conclusions

The results and conclusions of the development of this framework are explicitly stated and underpinned with empirical research. A selection of responses are presented and commented upon further by the authors adding to the robustness of this framework. The authors conclude by identifying implications of the framework, within which they discuss the activities that the framework could be used for such as exploring tacit and implicit knowledge, using it as a structure for discussing knowledge management issues and as a basis for communication and sharing of ideas. The authors finally point out that they do not advocate a particular methodology or process to co-ordinate such activities but the various configurations can be combined to define a process or methodology.

Summary

The purpose and subsequent discussion of this framework is explicitly stated, well structured and clear. The methodology based on the Delphi process used by the authors provides validation and adds to the credibility of this framework. Knowledge management process, activities, development and testing are all well reasoned and empirically robust. Theoretical underpinning is applied to specific knowledge activities such as generating knowledge and the sub-activities involved in this process. Overall, however, the framework is not underpinned by any specific theory. The main contribution to be taken from this framework relates to the process and activities that should be considered to implement knowledge flow and manipulation. The empirical research undertaken is robust and provides perspectives on knowledge management that are useful to consider as secondary research in the development of a framework for the evaluation of an organisation's readiness to engage with the concept of knowledge management.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 92	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	1	5
Process	5	5	5	2	5
Activities	5	5	5	4	5
Develop & Test	5	5	5	5	5

Hylton A (2002)

Purpose

This framework is based on a Knowledge Audit (K audit) for knowledge valuation by exploring the tacit knowledge in people's heads and explicit knowledge in the organisation storage systems. The purpose is reasonably clear and structured, however discussion becomes ambiguous particularly in relation to process. The K audit is

described as an evaluation of explicit and tacit knowledge resources and purports to be a systematic and scientific procedure to diagnose the organisational health of knowledge and provide evidence to establish whether organisational knowledge is being maximised. There is no evidence to confirm that this has been achieved. The author refers to two case studies, using these as examples where employers do not know the extent of their knowledge value, and asserts that the K Audit would be beneficial, however there is no explicit empirical work to qualify this and there is no reference to theory.

Knowledge Management Process

The author recommends that the K audit should be the first stage of a knowledge management process because it involves explanation of the entire cycle of corporate knowledge. The emphasis is not on knowledge management process, but how it is evaluated. The author asserts that the K audit, therefore, measures efficiency of the knowledge flow, storage, and return on investment and establishes when particular knowledge is no longer required.

The process comprises three main elements. The first is the HyA-K-Audit, which focuses on people and the knowledge process and includes a survey of people in the organisation. The second is an inventory of current knowledge and is conducted through one to one interviews. The inventory also includes measurement of tacit and explicit knowledge. The third is a knowledge map that illustrates the structure and flow of knowledge, providing the opportunity to identify gaps and weaknesses.

Knowledge Management Activities

Knowledge management activities are referred to in the context of audit activities. These include indexing and categorising tacit and explicit knowledge by establishing the number and categories of knowledge workers, where they are located in the company, what job they do and what professional and academic qualifications they have achieved. Again there is no evidence of empirical work or theoretical underpinning.

Development and Testing

There is no indication of the approach taken to develop this framework, and although the authors imply that the framework has been successfully used, in reference to the case studies, this has not been discussed or referenced.

Results and Conclusions

There are no specific results and the author concludes by emphasising the importance of the audit.

Summary

The purpose of this paper is reasonably clear and presented with clarity, however discussion becomes ambiguous. There is no theoretical or explicit empirical underpinning throughout the paper. The proposal to introduce a process for auditing knowledge in an organisation is logical and practical, however, many of the assertions made by the author are not reasoned and the absence of development and testing and robust empirical underpinning do not engender confidence in what the framework is intended to achieve. This is particularly relevant in relation to the author's 'scientific' measurement of intangible aspects of knowledge management and the extent to which this could be successful. The framework is interesting from an evaluation perspective because it is generally based around an audit procedure, in particular the reference to categorising knowledge workers, where they are located in the company, what job they do and what professional and academic qualifications they have achieved, as well as the knowledge mapping approach.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 33	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	4	3	2	1	1
Process	3	3	2	1	2
Activities	1	1	1	1	2
Develop & Test	1	1	1	1	1

Joshi KD (2001)

Purpose

This is a framework for the systematic study of knowledge management behaviours during decision making. The purpose, methodology and discussion are clear and well reasoned. The framework identifies and characterises the constructs for studying knowledge management behaviours that emerge during decision making and the impact of the behaviour on process outcome. The author applies decision-making processes to knowledge management by reviewing knowledge resources and activities and the type of decision-making processes that may be undertaken according to the circumstances and type of knowledge under consideration. The framework is underpinned by decision theory and a theoretical approach to knowledge management based on the author's own previous empirical research.

Knowledge Management Process

The knowledge management process is briefly referred to in the context of the learning that is achieved during the decision making process and how the learning process alters

an organisation's resources. No further reference in terms of the knowledge management process in relation to the structure of the framework is offered.

Knowledge Management Activities

Knowledge management activities are explicitly referred to as the activities required to meet knowledge needs. These include knowledge selection, acquisition, use, transfer and internalisation. Each activity is described and used in the framework, which cross-references the activities with different knowledge management situations, sources and factors that influence knowledge management.

Development and Testing

Development has been undertaken from literature review primarily in relation to decision making and knowledge management. The framework's theoretical underpinning is derived from decision theory and the author's previous empirical research into knowledge management. Testing and empirical work specifically in relation to the framework produced has not been undertaken.

Results and Conclusions

The author concludes in a general way by highlighting that this framework defines and characterises knowledge management behaviours during decision-making, and provides a basis for further research.

Summary

The purpose, discussion and reasoning about this framework are clear and well presented in a structured way. The knowledge management process is briefly referred to and knowledge management activities are discussed in more depth. There is clear evidence of theoretical underpinning and empirical work from the author's previous research in the development stage. Testing of this framework has not been undertaken. If considered in

the context of evaluation, this framework contributes useful information relating to an organisation's readiness to engage with knowledge management specifically focussing on the decision making process.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Total Score 76					
Purpose	5	5	5	5	3
Process	3	3	3	3	3
Activities	5	5	5	5	3
Develop & Test	4	3	3	3	2

Kamara JM, Chimay JA, Carrillo PM (2002)

Purpose

This framework has been developed using previous studies into knowledge management processes in the construction and manufacturing industries. The purpose of the framework is explicitly stated as being a tool for the selection of a knowledge management strategy appropriate to the organisational and cultural context of an organisation and was developed within a project context. Drawing on previous literature, the authors review knowledge management presenting a clear and reasoned discussion. There is no reference to any theoretical underpinning.

Knowledge Management Process

The CLEVER framework includes four stages, which may be regarded as the overall process:

- Definition of the knowledge management problem - This stage is descriptive and the characteristics of the knowledge under consideration are defined, the potential users and sources of knowledge, and enablers and prohibitors for users and sources;
- Identify 'to be' solutions - This is essentially a gap analysis of where the organisation is and where it wishes to be in relation to strategy and policy. The outcome at this stage is a set of knowledge management concerns or issues that the user wishes to focus on;
- Identify critical migration paths - This stage defines how the user wishes to proceed and is synonymous with a critical path analysis;
- Select appropriate knowledge management processes - This stage relates to the implementation stage and the most relevant path that should be chosen from a standard list of processes to proceed with a selected strategy. Although the authors refer to processes, this may be more relevant to activities.

Empirical work has been undertaken through a study of knowledge management processes and the methodology used was explicitly stated, but there is no reference to theory. The outcome of this study highlighted that knowledge management in the construction and manufacturing industries lacked formal proactive knowledge management processes. There were, however, some examples of good practice such as the use of project management tools, documentation systems, regular revisions of project plans to learn from lessons of the past and use of certain procurement options. The missing processes derived from this study include identification of high-grade knowledge, making high-grade knowledge explicit and highly controlled, and assistance in selecting appropriate strategies for knowledge management. The authors continue to

refer to processes within the process, which can cause some confusion. They then identify tools of application, which are regarded in this case as activities.

Knowledge Management Activities

Knowledge management activities are not explicitly defined. The authors discuss the application of the framework within which three main tools are described:

- Problem Definition Template (PDT) is used to identify types of knowledge and knowledge management processes are referred to again in addition to those above. These processes are knowledge generation, knowledge propagation, knowledge transfer, knowledge location and access, and knowledge maintenance/modification;
- Knowledge Dimensions guide is introduced as that which identifies the current situation and potential future situation;
- Generic Knowledge Management Process Model is used to facilitate or identify resistors to develop the organisation toward the desired situation. This includes tacit/explicit, individual and shared knowledge and people, IT and paper based knowledge sharing.

There is no reference to theory and with regard to empirical work, this was conducted and has been referred to under knowledge management process.

Development and Testing

The main aims to develop and test the framework were explicitly stated at the outset. These are:

- to explore current knowledge management practices in manufacturing and construction industries;

- to draw out generic structures for knowledge management practices by cross-sector comparisons;
- to develop a viable framework for knowledge management in a multi-project environment;
- to evaluate the framework using real life projects and scenarios supplied by the participating companies.

Drawing on literature the authors reviewed definitions of knowledge management and established the framework for project research. The authors state that the development of CLEVER was undertaken based on empirical research and testing with participating organisations. However there is no further reference or discussion to support this.

Results and Conclusions

The authors conclude by summarising the purpose of the framework, that it is derived from literature and studies in collaborating organisations, though these are not identified. The authors recognise that there are many solutions in relation to various processes of knowledge generation capture and transfer and it was not their intention to introduce another process, however this appears to be exactly what they have done.

Summary

The purpose of this framework is clear and discussed in a coherent manner, although it does appear to be complicated by the interchangeable use of terms, which for the practitioner can cause some confusion. The knowledge management process is identified and activities are referred to as processes within a process with an additional set of activities, which are tools to implement knowledge management. The structure and dual use of the term process can result in ambiguity. The framework is weakened by the lack of theoretical underpinning, and although reference to empirical work in the form of case studies through collaborating organisations has been made, there is no further discussion about these. The main lesson to be learned from this framework is the need for clear

structure and consistent use of language when developing a layered approach to knowledge management. The approach taken provides a reasonable example to draw ideas from the Knowledge Dimensions Guides.

Score Key	<i>1 = lowest possible score 5 = highest possible score.</i>				
Total Score 54	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	1	2
Process	4	3	3	1	3
Activities	4	2	2	1	3
Develop & Test	3	2	2	1	2

Knight T, Howes T (2003)

Purpose

Overall the purpose of this framework is clear, to assist in consultancy and investigation into knowledge management in organisations. The framework comprises a tool set to structure thinking and is intended by the authors to provide a holistic approach to knowledge management at a strategic level. As discussion unfolds, however, the approach becomes ambiguous, partly because although the authors emphasise the importance of addressing knowledge management at a strategic level, they tend to place equal emphasis on individual projects and the process of project management. The background and introduction to the framework contains reference to previous literature and theory, but this does not appear to have been directly applied to the framework.

Knowledge Management Process

The knowledge management process has been clearly identified as a five-stage process, which comprises:

- a definition of pressures on organisations and assessment of the potential for leveraging knowledge to deliver corporate objectives;
- development of strategy by assessing the current state of knowledge and defining the knowledge vision and benefits;
- design of the new order of the organisation, which includes leadership, people issues, process, technology and information -
 - leadership includes responsibility for the delivery of a knowledge management programme;
 - people include consideration for behaviours, communication and knowledge sharing, skills and cultural issues;
 - processes involve analysis of business process to improve knowledge identification, use, creation, sharing and recording;
 - technology is the IT tools that support knowledge management;
 - information refers to the relevance, availability, context and quality of information and IT to support this.
- implementation and planning for change, including budgets and priorities. At this stage the authors argue that it is unlikely for a strategy to be solely top down and reach across the organisation. It is more likely to build from the bottom or middle of the organisation;
- an assurance that the expected benefits are realised and relevant resources are committed to identifying future opportunities.

The authors emphasise project management, benefit management and change management and explicitly state that the framework is a model for knowledge management programmes. In addition links are made between workgroup level and overall organisational strategy level. Discussion is clear and well presented. There is no

evidence of theoretical underpinning. The authors indicate that empirical work has been conducted through use of the framework in organisations from which adjustments have been made periodically when required.

Knowledge Management Activities

Knowledge management activities are not explicitly highlighted but can be deduced from the guidance offered about the process. For example, at each stage of the process the authors both propose and provide, where relevant, activities such as surveys, self assessment tools, training and other analytical tools, which will draw out the activities necessary to meet the process.

Development and Testing

Initial development of the framework has been undertaken based on a literature review. The literature review, however, does not appear to have been explicitly and directly applied to the stages of the framework. Testing of the framework has been undertaken based on the authors' experiences of using the framework in organisations, of which specific examples are provided. The authors provide a methodology of how the framework was used and what developments or adjustments were made from inception to the current state. There is no indication of theoretical underpinning.

Results and Conclusions

In conclusion the authors review and summarise the stages of the framework again and follow this up with general discussion about knowledge management in the current business world and the potential difficulties organisations might face, which knowledge management could address.

Summary

The purpose of the framework has been clearly stated, providing a framework comprising a set of tools to structure thinking and implementation of knowledge management in an organisation at a strategic level. Although the intended purpose relates to organisational strategy, subsequent discussion focuses more on knowledge projects within an organisation with comment about linking these to strategy. At which point discussion becomes disjointed. The knowledge management process is explicitly referred to and clearly discussed and justified in a practical sense, but contains no reference to theory. Knowledge management activities are not explicitly referred to but can be deduced from the guidance offered to underpin the process and these include surveys, self-assessment tools, training and other analytical tools.

Empirical work throughout, including development and testing is based specifically on the authors' own experiences and descriptions of case studies are offered.

There is no clear conclusion and the authors purport to present the lessons learned, however a summary and review of the stages of the framework is presented with a reaffirmation of the framework's benefits. This is followed by a general discussion about knowledge management in the current business world. This framework significantly contributes to the concept of evaluating an organisation's Knowledge Management Readiness. The tools and guidance provided offer a practical approach that could be adapted.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 75	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	4	4	2	5
Process	5	5	5	1	5
Activities	4	3	2	1	5
Develop & Test	5	4	4	1	5

Kwan M, Balasubramanian (2002)

Purpose

The authors present a knowledge management system, the purpose of which is explicitly stated. It is intended to provide an integrated workflow support capability that captures and retrieves knowledge within context and then organises the knowledge and context in a knowledge repository. A clear methodology and rationale for undertaking this approach is provided through discussion of secondary research and literature. There is no theoretical underpinning.

Knowledge Management Process

The knowledge management process is specifically discussed as one aspect of the overall proposed system (KnowledgeScope) and is a model for knowledge in context, which includes process designs, process instances and knowledge resources that are captured, stored and retrieved from a repository. Knowledge management is categorised into three types and the authors propose that a knowledge management system should organise knowledge around organisational processes and the processes are the scope of an application. Each application then contains the three types of knowledge which are

process knowledge, case knowledge and knowledge resources. This is clearly discussed and although a technical approach to knowledge management, the authors consider the human interface with technology.

Emphasis is placed on the process of knowledge capture, sharing and utilisation. Through a review of knowledge management technology intended to underpin the process, the authors identify both the technical weaknesses and consider the failures that have been experienced in relation to human interface with the technology. The technology reviewed includes knowledge repositories, process memory systems and organisational memory information systems. Discussion is presented in a balanced and understandable manner for non-technically minded users, which engenders understanding about the system being proposed.

The overall system is divided into four perspectives:

- functional perspective which asks what tasks are performed and why;
- informational perspective describes the information used and produced by tasks in the process and relationships between them;
- organisational perspective answers who, where and with what resources tasks are performed;
- behavioural perspective answers questions about when and how tasks are performed.

The development of the process has been undertaken through empirical work, but there is no evidence of theoretical underpinning.

Knowledge Management Activities

Knowledge management activities are not explicitly referred to, but the system concentrates on the overall process and sub processes, which can also be activities.

Development and Testing

The system has been developed based on secondary research and literature to establish the rationale at every stage of the system development. Testing has been undertaken by applying the system to a case organisation and evaluating its performance. There is no explicit theoretical underpinning.

Conclusion

The authors conclude by highlighting the results of testing and recognising the weaknesses in the system, proposing further development work to improve. The weaknesses identified include the need for additional information in relation to specific context to be made available. For example, geographical locations, strategic intents and customers. In addition the authors point out that provision of this system does not entirely address knowledge management in an organisation as this requires culture change and a change in mental models where the workforce begin to think in terms of knowledge management.

Summary

The purpose, discussion and reasoning about the development, implementation and evaluation of this system are robust. During the development stage specific applications of the system have been further discussed and benchmarked against current systems and technology available to justify the need for this particular approach. The knowledge management process is discussed in relation to business processes and what can be achieved within the scope of this model. Knowledge management activities are not explicitly referred to, but easily derived from sub processes. Empirical work has been undertaken by implementing and evaluating the system in a case organisation from which weaknesses were identified and proposals to improve presented. The attention to the technical interface and the systems perspectives that comprise the process provide a useful contribution to evaluation.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 79	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	1	5
Process	5	5	5	1	5
Activities	4	3	3	1	5
Develop & Test	5	5	5	1	5

Kwang KL, Pervaiz KA, Mohamed Z (1999)

Purpose

The purpose of this framework is twofold, firstly to measure knowledge management and to use the results for leveraging an organisation against its competitors and secondly to improve customer satisfaction. The authors provide a brief example of knowledge management distinguishing between tacit and explicit knowledge and apply quality strategy to knowledge management, which is then connected with a cost model to produce the actual framework. There is no theoretical underpinning or empirical work. Discussion is weak with many assertions made and inadequate attention to knowledge management literature.

Knowledge Management Process

The overall knowledge management process is not referred to, but the activities as indicated in the next section could be identified as the process with further activities highlighted to meet the requirements of the process.

Knowledge Management Activities

Knowledge management activities or process are explicitly referred to and connected with a plan-do-check-act cycle associated with quality strategies as follows:

- capturing or creating knowledge (plan);
- sharing knowledge (do);
- measuring the effects (check);
- learning and improvement (act);

In each case additional activities are briefly described to achieve the main activities or process as listed. The main activities are then cross-referenced with a cost model to develop a matrix or framework. The cost model includes:

- customer which specifically refers to the information and learning that can be derived from the customer base;
- organisation which relates to the key skills of people and how skills are shared;
- suppliers, which explores the cost, quality and delivery service from suppliers, however there is no mention of the opportunity to share or glean knowledge from suppliers;
- technology refers to how many PCs there are and whether they are linked and used effectively.

Overall there is inadequate discussion of the knowledge management activities and the rationale behind the interaction with the cost model. A surface level description is offered and there is no reference to empirical work or theoretical underpinning.

Development and Testing

Development has been undertaken in a fairly superficial way and although some reference to literature has been made, it is inadequate for reasoning and justification of

the statements made. There is no indication that empirical work and testing has been undertaken.

Results and Conclusions

The author concludes by highlighting the benefits of considering knowledge management as a quality strategy to improve the customer experience, but the purpose of the framework does not indicate this as being the intention, but part of the process.

Summary

This is a fairly superficial presentation of a knowledge management framework with a clear purpose, but ambiguous outcome. Throughout, there is little discussion, and limited evidence or reasoning to support any of the assertions made. Although some literature has been referred to, the extent of what is being proposed requires more in-depth discussion and reasoning for it to be in some way valid. Statements are unsupported by empirical work and theoretical underpinning. The contribution that this framework makes to the evaluation of an organisation's readiness to engage with knowledge management relates directly to the application of a quality process and potential quality audit.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 41	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	2	2	1	1
Process	4	3	2	1	1
Activities	5	4	3	1	1
Develop & Test	1	1	1	1	1

Lee JH, Kim YG (2001)

Purpose

This is an integrated framework intended to build organisational capabilities of knowledge management. The purpose is explicitly stated and discussion is undertaken with reasoning and clarity based on a sound review of knowledge management literature and theory. The authors consider resource-based theory, and why this is becoming more important in knowledge based organisations. In addition life cycle theory is related to the different stages of knowledge management which provides understanding about the overall framework. From this review the authors propose four key stages of the knowledge management process.

Knowledge Management Process

The knowledge management process is explicitly referred to as initiation, propagation, integration and networking. These have been chosen based on resource based theory and life cycle theory and are described and reasoned as follows:

Initiation stage - This is the stage whereby organisations begin to recognise the importance of organisational knowledge management and prepare for organisational wide knowledge management efforts. To achieve this, the organisation requires, for example, commitment, voluntary involvement and long term planning.

Propagation stage - This is when organisations begin to invest in their knowledge infrastructure to facilitate knowledge activities such as creating, sharing, and storing and utilising knowledge. At this stage a complete organisation wide knowledge management process is identified including appropriate technology.

Integration Stage - At this stage organisational activities are institutionalised as daily activities. As more in the organisation become familiar with knowledge activities, the knowledge activities increase.

Networking stage - This is an external integration stage where organisational knowledge is networked with suppliers, customers, research firms and universities. At this stage the focus of organisational efforts becomes more specialist on core knowledge and other required knowledge is outsourced.

The knowledge management process is well reasoned and theoretically underpinned.

Knowledge Management Activities

The activities needed to achieve each stage in the process are clearly identified from a management perspective and labelled organisational actions. These are well structured and organised as follows:

- Initiation - Dissemination of the needs of knowledge management.
 Assess current problems of knowledge management.
 Share visions and goals.
 Compile long term plan.
 Conduct benchmarks pilot projects.
- Propagation - Set up knowledge management process.
 Build reward system.
 Develop HRM programmes.
 Develop knowledge typology.
 Build knowledge management system.
 Conduct events to activate knowledge activities.
- Integration - Evaluate effectiveness of knowledge.
 Scan changes in environment.
 Monitor and control activities.
 Define and focus on core knowledge areas.
 Disseminate best practice.

- Networking - Analyse internal and external environment.
Develop alliances with partners.
Share visions and goals with partners.
Link knowledge management with partners.
Facilitate inter-organisational knowledge sharing and collaborations.

The actions to achieve each activity are discussed with reasoning and recognising that different organisations may approach this in a different way, the authors provide guidance rather than prescription.

Development and Testing

Development of this framework was undertaken through a literature review and tested through empirical research with 21 organisations, 10 Korean and 11 International cases. The methodology to conduct this research and testing has been made explicit and the authors recognise the level of subjectivity, which they attempted to reduce through triangulation using three external evaluators who are familiar with knowledge management.

Results and Conclusions

The authors conclude by reviewing what has been achieved in relation to this framework and recognise the limitations, such as subjectivity and their own personal biases, however the methodology used has attempted to deal with this. They propose more solid empirical validations such as a cross sectional survey and longitudinal case study.

Summary

Overall this is robust framework grounded in theory and empirical research. The theoretical base is a combination of resource based theory and life cycle theory. Knowledge management processes are explicitly stated and reasoned. Knowledge

management activities comprise actions that are required in an organisation to achieve the objectives of the process as well as specific knowledge activities. Development and testing has been undertaken using a clear methodology and critique. The main weakness in this framework is an assumption that individuals within an organisation will engage and commit to the concept of knowledge management. The authors do not consider the power and politics associated with knowledge sharing, but overall provides a well structured framework that could contribute significantly to the development of an evaluative framework.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 100	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	5	5
Process	5	5	5	5	5
Activities	5	5	5	5	5
Develop & Test	5	5	5	5	5

McAdam R, Reid Renee (2001)

Purpose

The purpose of this framework is clear, to identify and describe the key dimensions of knowledge management using a socially constructed knowledge management model, with the intention of determining perceptions of knowledge management in SMEs and large organisations. The authors have classified knowledge management into three categories, which are Intellectual Capital Models, Knowledge Category Models and Socially Constructed Models for the knowledge management process. The Socially Constructed Model was chosen because of the breadth of definition of knowledge and the intrinsic link with the social and learning processes in organisations. Discussion,

reasoning and theoretical underpinning as to how the three categories have been chosen is very brief, though what is available is presented with clarity. The final model that the authors propose has been adapted from Demarest (1997).

Knowledge Management Process

The knowledge management process is clearly referred to in the context of four key dimensions in the model. The process, therefore, is:

- Knowledge construction which includes scientific and socially constructed knowledge;
- Knowledge embodiment which includes the process of social interchange where knowledge is embodied within the organisation;
- Knowledge dissemination which is the process of sharing knowledge throughout the organisation and its environment;
- Knowledge use which is the process of using knowledge to economic advantage in regard to organisational outputs.

This is presented with clarity and reasoning, and empirical work has been undertaken to determine perception of knowledge management. There is no theoretical underpinning.

Knowledge Management Activities

Knowledge management activities are not referred to.

Development and Testing

This model is used as a framework to undertake research into perceptions of knowledge in SMEs and large organisations through research survey and workshops. The model is adapted from Demarest (1977), but there is no indication of what adaptations have been made. Within the scope of the model, 296 questionnaires were distributed and 95 returned of which 49 were SMEs and 46 were large organisations. From the results of

the survey eight workshops were held and the results presented. There is no evidence to indicate the effectiveness of the model over and above the questionnaire. In terms of considering perceptions of knowledge management the questionnaire approach may be useful in relation to assessing knowledge management readiness, but the model itself does not appear to provide anything more than the questionnaires.

Results and Conclusions

The conclusions from this model and associated survey identified the usefulness in establishing organisational perceptions of knowledge management. The authors propose that the four key dimensions in the model are representative of approaches to knowledge management in both large organisations and SMEs. When comparing large organisations and SMEs, the model was used to draw out differences in approaches identifying that large organisations are more people based knowledge oriented and SMEs were more mechanistic.

Summary

The purpose of this model is clearly stated and discussion progresses with clarity and reasoning. The categories of knowledge management that the authors propose appear to be limited and there is inadequate discussion to justify why the three categories have been chosen. The socially constructed model is an adaptation from Demarest (1997), but there is no indication of what adaptations have been made, therefore the development of the actual model has not been adequately discussed. A research methodology based on survey research and workshops is presented, but there is no evidence to indicate the effectiveness of the model over and above the use of a questionnaire, which explores perceptions of knowledge management in large organisations and SMEs. Knowledge management processes have been referred to within the context of four key dimensions of the model and knowledge management activities have not been included. Considering this framework in the context of an evaluation of an organisation's Knowledge Management Readiness, the distinction between category models such as Intellectual Capital Models, Knowledge Category Models and Socially Constructed Models provides

a useful perspective to consider and explore further. There is no explicit theoretical underpinning in relation to the model.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 47	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	3	1	1
Process	4	3	3	1	1
Activities	1	1	1	1	1
Develop & Test	5	5	3	1	1

Merali Y (2002)

Purpose

The purpose of this framework is not entirely clear at the outset. In the first instance, the author proposes a cognitive congruence framework intended to reconcile contentious issues in knowledge management literature. It is then proposed that the framework could be used to explain the relationship between cognitive, action and social aspects of the knowledge management process in the organisational context and can be used as a management tool. The framework has been developed in the context of differing views on knowledge management. As discussion unfolds, it becomes clearer that the framework emphasises individual and collective knowledge sharing. Although theory is referred to it is not robustly applied in this case. Empirical work has been undertaken in a case organisation, though the approach used has not been made explicit

Knowledge Management Process

The knowledge management process is considered in the context of socially situated processes of knowledge management by connecting the cognitive, social and action dimensions. The framework contains a cycle that includes:

- Schema, which is the knowledge structure representing organised knowledge about an information domain and includes how knowledge is retrieved and used. Overall, Schema contains a collection of interconnected beliefs and perceptions;
- Self-concept which is a perception of one's identity in relation to other individuals or groups;
- Relationship Scripts, which refers to relationships between individuals, inter organisational knowledge networks, credibility and filtering of information. This can be divided into a macro and micro level. The macro level is useful for understanding how an organisation perceives itself within its environment and the micro level helps make sense of the social learning processes;
- Relationship Enactment, which links the individual with the social dimension and is scaleable from the individual to the collective. Collective enactment is the process by which the self-concept is realised, experiences are formed and learning takes place.

The process is confusing, because it is not clear how Schema, Relationship Scripts and Relationship Enactment differ from each other in practice. Theory is referred to, but not adequately discussed in a clear and reasoned way.

Knowledge Management Activities

Knowledge management activities are not referred to in this framework.

Development and Testing

The framework was applied to three different organisations and used to identify gaps in current levels of collective knowledge as compared to that which was necessary for success in circumstances of change and development in each organisation. The authors do not explicitly indicate the methodology used and in essence offer a descriptive and retrospective evaluation of the success of applying the framework. There is no critique and the absence of a methodology obstructs understanding of this framework and how to apply it.

Conclusion

The authors conclude by stating that the framework is a sense-making device for studying organisations in dynamic contexts and reconciling and co-ordinating individual and collective actions. As a framework for studying organisations, it may be effective, but the absence of the methodology and critique means that the extent to which this was achieved is questionable. Further, the authors originally proposed that this was a cognitive congruence framework intended to reconcile contentious issues in knowledge management literature. There is no evidence to suggest that this was achieved.

Summary

Although the purpose of this framework was made clear, as discussion unfolds it becomes less evident as to what is being proposed. This is further exacerbated by the weak discussion and an expectation that the user would know how to utilise the framework, for example there is no explicit methodology to explain how the framework was used in case organisations. Further, there is no indication of how knowledge management could be implemented in an organisation. The framework appears to be based on social psychology and for the standard practitioner offers little support in application except as an exploratory exercise, which in itself is limited. The authors do recognise the shortcomings of the framework and point to the dangers of ignoring environmental issues, but offer little indication as to how to address these.

There is no explicit theory underpinning many of the assertions that the authors make, but reference is made to learning theory and through the literature review various other theoretical underpinnings are briefly referred to. This is not however robust and structured in such a way that the reader easily understands the authors perspective in the development of this framework.

In relation to evaluation of an organisation's readiness to engage with knowledge management this framework appears to be a useful tool for the evaluation of current knowledge and identification of new knowledge needed in the change and development of an organisation. However, further work would be necessary to realise its full potential.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 47	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	2	2	2	2
Process	4	3	3	2	3
Activities	1	1	1	1	1
Develop & Test	3	3	3	2	3

Mullich J (2001)

Purpose

Overall, the introduction and discussion about any proposed framework is unstructured, with weak links and no conclusions, which makes it extremely difficult to ascertain the purpose of any intended framework (if it exists). It is in fact unclear if there is a framework at all. The importance of distinguishing between knowledge management and information management is stated, with no further discussion about the differences

between the two or the consequences if the distinction is ignored. A subsequent comment points to the need to provide better information to achieve positive results, yet the focus is about growing a knowledge management system. Initially, slow incremental implementation of a knowledge management system by means of pilot projects is proposed, but the perspective shifts quickly to being organisational-wide. Discussion therefore is ambiguous and there is little or no reference to literature. There is no theoretical underpinning or empirical work throughout.

Knowledge Management Process

There is no explicit knowledge management process discussed, although components are mentioned that might be considered implicitly to be activities within a knowledge management process. No explicit links are made between the activities. Reference is made to project processes and business processes, and the process of providing information, but there is no focus on the knowledge management process.

Knowledge management is regarded as impacting on business process, rather than being regarded as an integral part of the process and one comment explicitly states that during the implementation of a knowledge management system, people want information about using technology more than the knowledge management process.

Knowledge Management Activities

Apart from brief comment about knowledge transfer and collaboration, knowledge management activities are not evident and have not been discussed in a structured manner. However, there is a set of bullet points, which the author promotes as a means to involve people, and consequently, as a means to successful knowledge management initiatives.

Development and Testing

The author has not presented a specific framework or proposal for testing.

Results and Conclusions

There are no real results or conclusions. A list of bullet points is presented that appear to be the factors that could be considered in the development of a knowledge management system.

Summary

This is an anecdotal presentation of a knowledge management system with an ambiguous purpose. Throughout, there is no explanation, very little discussion, and no real evidence or reasoning to support any of the assertions made. Statements are unsupported by explanation, discussion, evidence, or reasoning. There is no overall research design and no theoretical underpinning or empirical support is provided.

The list of bullet points are the nearest this gets to a 'system', and, given the previous comments, these cannot be considered to be robust or reliable.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 20	Explicitness	Clarity	Reasoning	Theory	Empirical work
Purpose	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>
Process	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>
Activities	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>
Develop & Test	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>

Newman B, Conrad KW (2000)**Purpose**

The purpose of this framework is clear, to characterise knowledge management tools such as methods, practices and technologies available to knowledge management practitioners. The authors describe the framework as a classification framework that incorporates principles, theories and models that have been refined to support the author's approach to knowledge management. Theory however is not explicitly applied. Discussion continues with clarity and recognition of the association between people and technology and consideration of knowledge management as more of an integrating practice than a new management practice. The authors assert that the framework has its theoretical roots in complex systems and human knowledge interactions, though they do not expressly discuss this. They propose that the framework can be used to support internal development efforts to map specific tools and technologies according to their potential roles in knowledge flows; identify functional gaps; determine integration points; endorse efforts that seek to develop technologies with a specific function. There is no evidence of empirical work to underpin this.

Knowledge Management Process

The knowledge management process is drawn out in relation to the knowledge flow, with activities to produce, manipulate and use knowledge. There is no theoretical and empirical underpinning in relation to process.

Knowledge Management Activities

The author organises knowledge flows into four activities, which are knowledge creation, retention, transfer and use. These activities are clearly described in more detail individually. In addition, explicit, implicit and tacit knowledge artefacts are described. Explicit knowledge artefacts include hard-based information for example reports, books, and files. Implicit knowledge artefacts are described as information that can not be explicitly captured but can be inferred. Tacit knowledge artefacts are those which can

not be codified and include unconscious awareness as much as knowledge that one is consciously aware of.

The authors assert that individual, automated and organisational agents make knowledge artefacts active. Individual agents relate to people and may function independently or as part of a team and are core to the knowledge process. Automated agents refer to technology, and organisational agents are more complex because they relate more to the organisation's retention and transfer of knowledge, which can be both technical and human, and incorporate culture. The authors continue by discussing the behavioural differences between agent types and how different agents may deal with knowledge, whether codifying, contextualising or sharing. The framework organises, applies and integrates knowledge artefacts and agents to enable relevant selection of tools, and the development and deployment of knowledge. Although rationally described, there is no evidence of empirical work, theoretical underpinning and little reference to literature.

Development and Testing

There is no indication of empirical testing of this framework and little reference to previous literature. The framework therefore remains conceptual.

Results and Conclusions

There are no specific results and the author concludes by proposing how the framework could be used, encouraging the reader to apply it and feedback to the authors. At this stage comment is made that further descriptions of the theoretical underpinnings will be undertaken in the future.

Summary

The purpose of this paper is explicitly stated and discussion continues with clarity and in a logical manner, however, there is an absence of theoretical and empirical underpinning and little reference to literature throughout. The knowledge process is briefly mentioned,

but the majority of content focuses on knowledge management activities, which are described in some detail. It appears that development has been progressed from the author's own perspective and the framework has not been tested. The authors conclude by challenging the reader to apply the framework and feedback their perspectives. The most interesting contribution to be gained from this framework relates to the author's perspective on the various agents, which are individuals, automated and organisational agents. The recognition that individual agents may function differently when in a team based situation, when interacting with technology or at an organisational level may be an important consideration when evaluating an organisation's readiness to engage with knowledge management. For example, the impact could require different management approaches and different levels of appreciation in terms of the dominant and sub cultures of the organisation.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 44	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	3	1	1
Process	2	3	2	1	1
Activities	5	5	3	1	1
Develop & Test	1	1	1	1	1

Pérez Pérez M, Sánchez AM, Carnicer PL, Jiménez JV (2002)

Purpose

The purpose of this framework is explicitly stated, to study the potential feasibility to telework knowledge tasks and jobs. Analysis of knowledge tasks is undertaken

according to the knowledge process, which includes generation, codification, storage and transfer. Overall discussion progresses clearly and is well reasoned, based on a review of literature and previous empirical research in relation to teleworking. The methodology used to develop the framework is presented, resulting in a clear and understandable framework, with the exception of one area of discussion relating to an analysis model of knowledge tasks or processes in relation to variables and values. This element of the framework is disjointed and ambiguous. There is no theoretical underpinning provided.

Knowledge Management Process

The author assesses and discusses knowledge management literature to establish the most appropriate knowledge management process for the framework. The knowledge management process is explicitly stated as being:

- Knowledge Creation;
- Knowledge Acquisition;
- Knowledge Retention;
- Knowledge Distribution.

This is clearly discussed with the addition of Information Communication Technology and information in the context of supporting the process. There is no theoretical underpinning or empirical work.

Knowledge Management Activities

Knowledge management activities are referred to as the activities undertaken in order to achieve the requirements of specific roles in the context of knowledge roles and in relation to the feasibility of these roles for teleworking. The author states that the choice of roles and tasks have been derived from knowledge management literature, but no further empirical work appears to have been undertaken to validate this choice.

Development and Testing

Development of this framework has been undertaken through literature review and empirical work has been undertaken specifically in relation to teleworking. There is no evidence of empirical work having been undertaken to test the final framework.

Results and Conclusions

The author concludes by summarising the purpose and potential benefits of the framework and proposes further research to empirically test it based on case study and surveys, to both validate and extend the framework.

Summary

Overall the purpose of this framework is clear and although well discussed and reasoned through reference to literature, there is no explicit theoretical underpinning. The knowledge management process is established from a review of literature and knowledge management activities are referred to as knowledge tasks associated with specific jobs. Development has been undertaken in a clear and reasoned way based on literature and empirical work in the area of teleworking. The authors provide a brief methodology, which assists in understanding the approach taken. Empirical work to test the final framework has not been undertaken and there is no theoretical underpinning. This framework is useful because it contributes to one aspect of the modern organisation that relates to mobile working, telecommunicating and virtual working in the context of knowledge management.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 55	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	3	1	2
Process	5	5	5	1	3
Activities	3	3	2	1	3
Develop & Test	2	2	2	1	1

Pervaiz K, Kwang KL, Mohamed Z (1999)

Purpose

The purpose of this framework has been made clear and it is intended to measure knowledge management through screening and evaluation, incorporating tactical and strategic elements, measuring and leveraging knowledge management for competitive advantage. Following a brief introduction to knowledge management the author continues by discussing measurement, including definitions of measurement, development of measurement, performance measurement and measurement systems. The paper continues with the author applying knowledge management to a measurement system, in particular the Deming 'plan, do, check, act' model, but does not adequately reason why this approach is better than others. Overall discussion is weak, with descriptions of techniques used in measurement taking precedence over knowledge management. There is no evidence of theory and empirical work.

Knowledge Management Process

The authors refer to the knowledge management process in the context of applying the Deming measurement model:

- capturing or creating knowledge (plan);
- sharing knowledge (do);
- measuring the effects (check);
- learning and improving (act).

The main emphasis is on measurement and not on the knowledge management process. There is no discussion as to why the Deming model would be chosen over other measurement techniques and this appears to constrain the broader aspects of knowledge management. These however seem to be picked up by applying another measurement model, the cost model, when considering activities.

Knowledge Management Activities

The authors identify knowledge management activities by applying a cost model, which includes customer, organisation, suppliers, technology and provides examples of activities associated with each area. From this a measurement matrix for knowledge is introduced. The authors assert that the matrix provides a deeper understanding of knowledge management, including hard and soft aspects, and links knowledge management to policy and strategy. There is no discussion or evidence to substantiate this, no theoretical underpinning or empirical work. Additional activities that relate to potential areas for measurement are presented, though these are not included in the matrix and are speculative in nature.

Development and Testing

Development of the framework has been undertaken based around measurement techniques and there is no indication that empirical work and testing has been undertaken. There is no evidence of theoretical underpinning.

Results and Conclusions

There are no specific results and the authors conclude by presenting more questions in relation to measurement, additional knowledge management performance measures and a list of bullet points to reinforce the importance of knowledge management.

Summary

The purpose of this framework is clearly stated and the authors present models of measurement, intended to screen and evaluate knowledge, but the approach overall appears to be fragmented. The knowledge management process is referred to in the context of measurement using Deming and the authors apply a cost model to knowledge management activities. This approach appears to ignore the broader complexities and richness of knowledge management, which the authors appear to recognise in their conclusion, when they introduce further knowledge management performance measures, highlighting the fragmentation and incompleteness of this framework, rendering the final matrix as unconvincing.

The authors have not clearly discussed and clarified why they have taken a particular approach to either their choice of measurement or approach to knowledge management. There is no theoretical or empirical work throughout, any clear approach to development and the framework has not been tested. Considering this framework in the context of an organisation's readiness to engage with knowledge management, the key contribution relates to measurement of the organisation's ability with a view to undertaking knowledge management, rather than assuming that the organisation is already fully engaged with knowledge management.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 34	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	4	3	1	1	1
Process	4	2	1	1	1
Activities	4	2	2	1	1
Develop & Test	1	1	1	1	1

Robertson S (2002)

Purpose

The purpose of this approach is explicitly stated as a description of two knowledge sharing systems and exploration as to why they were used differently. However, the author refers to knowledge sharing systems, knowledge management systems and information systems, using the three terms interchangeably, making no explicit distinction between these concepts. A comprehensive description of an IT system is provided, that was implemented in a first case scenario and modified in a second, as a result of a merger between two companies. As discussion progresses, it loses clarity and appears to be more about one IT system that has been modified and developed rather than two systems. There is no overall theoretical underpinning and empirical work is limited to the boundaries of the merging organisations, presented in a retrospective and descriptive manner.

Knowledge Management Process

The author draws on previous experience of developing and implementing an IT system, providing clear detail about the capabilities of software. There is no reference to the overall knowledge management process and little use of literature in discussion about the

use of the chosen software. Although the importance of people, teams and collaboration is explicitly stated, there is no further discussion and the focus is on IT based information sharing, and interaction with the IT system. There is no reference to theory and empirical work specifically in relation to the knowledge management process.

Knowledge Management Activities

Knowledge management activities have not been referred to except in the context of implementing a system and accessing information through the use of ICT. The author expressly includes hard data based activities such as document storage, search capability, security features and web based software. There is no reference to theory and empirical work is based on the author's perspective within the context of the merging organisational IT systems.

Development and Testing

The approach used in development and testing involves a description of the author's experience in developing an IT system, which is company focused and incremental. The author highlights the need for a participative approach with key user groups to design and develop the system, but there is no overall design for this development and no indication of testing or benchmarking beyond the confines of the organisation. The author highlights issues that are related to the implementation and evaluation of a knowledge sharing system, which he suggests have been collected through interviews with users, however there is no methodology and context in which this information has been collected and no reference to theory.

Results and Conclusions

The author provides results to indicate increased use of the second stage modified IT system and reasons as to why this has been achieved. These include participation and discussion with users to achieve the most relevant design of the system and maintenance of a web site with living documents to ensure continued contribution. Although the

results indicate a high level of human issues including communication, there is no discussion about this aspect of knowledge management apart from interaction with the system. In the final conclusion the author identifies a list of activities that relate to information sharing, but again confuses the reader by explicitly referring to knowledge management, when in fact the content is about an IT system.

Summary

Overall, the purpose of this approach does not fully reflect the content, which is further exacerbated by the interrelated use of terms, for example knowledge management, information systems, knowledge sharing system. This is an experiential and descriptive account of the implementation of an IT system, based in a specific organisation. Although explanation, reasoning and evaluation are provided to a limited extent, there is little empirical support beyond the organisation and reference to empirical work contains no indication of how this information was collected. There is no overall research design and theoretical underpinning. A description of the development and implementation of an IT system and software is provided, with the implication that knowledge management is an IT system, yet there is no reasoning to underpin this perspective.

The main contribution this model offers to the development of an evaluation framework is the need for a participative approach when evaluating the current situation, and designing and implementing an IT system for information sharing in an organisation. This approach implicitly contains evaluation and in this case is specifically focussed on an IT system.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 30	Explicitness	Clarity	Reasoning	Theory	Empirical work
Purpose	3	1	1	1	2
Process	2	1	1	1	1
Activities	2	2	1	1	2
Develop & Test	2	2	1	1	2

Snowden D (1994)

Purpose

The purpose of this framework is to provide a context for the practices of knowledge management and a perspective for the role of intellectual capital assets within an organisation. In establishing the purpose of the framework, the author clearly distinguishes between knowledge and information and establishes the dimensions of knowledge management from individuals and judgement to communities on one axis and from tacit to explicit knowledge on another axis. The author then continues to consider a perspective on knowledge management through decision making, highlighting that the balance between tacit and explicit knowledge needs a model of decision making for example the uncertainty matrix. The uncertainty matrix contrasts uncertainty of objectives with uncertainty of cause and effect, providing four environments each requiring a different balance of tacit and explicit knowledge. Further discussion is not undertaken about this matrix, nor is it referenced. There is no explicit theoretical underpinning or empirical work.

Knowledge Management Process

The author refers to four key elements, as the process within which knowledge management is progressed. The elements are:

- knowledge mapping;
- competence creation;
- intellectual capital systems;
- organisation change.

Knowledge mapping is a process of discovery through the use of knowledge and includes judgements and decisions. For example, decision making creates a picture of how information flows and the results can be mapped linking different decision processes in the organisation. Knowledge mapping also includes consideration for participation, communication, team formation, and creation. The author recognises that whilst this is appropriate for explicit knowledge, the process for tacit knowledge is more complex and in this sense considers competence creation.

With regard to competence creation, it is the authors' view that tacit knowledge assets can be made explicit and obstructions to this process may include the mystification of an individual's knowledge, whereby the individual wishes to maintain an authoritative position. However other tacit knowledge can be made explicit through communities and as such the author proposes competence creation, which relates to communities of tacit knowledge holders. Communities can be developed according to the needs of the organisation and based around individuals who have a natural professional affinity. This can be seen in organisational structures, however, the author recommends that such communities should be time dependent. If they exist too long they are likely to become part of the organisation structure and this should be avoided, as the process of knowledge sharing will diminish and recommends that communities should be formed around a time dependent task. The author provides no empirical evidence or theoretical underpinning to justify this assertion.

Intellectual capital systems are stated by the author as one of the most common knowledge management projects. Intellectual capital systems are generally IT based, but should be developed through effective knowledge mapping and creation of communities of competence to ensure effective use of IT.

Organisation change is the final stage of the process and relates to the creation of an organisation that is knowledgeable and capable of sustained learning. This process includes specific activities that are highlighted below.

Knowledge Management Activities

Knowledge management activities are referred to within the context of organisation change only. Activities include learning contracts, mentoring, self-development, and network management, training audits and best practice exchange. The author points out that best practice exchange is a beneficial covert method of knowledge exchange and recommends this as an entry level to knowledge management in an organisation. This approach is relatively inexpensive and encourages both tacit and explicit knowledge exchanges. There is no indication of empirical work or theoretical underpinning to support this perspective.

Development and Testing

There is no indication of the methodology used to develop this approach and there is no evidence of empirical work and testing having been undertaken in relation to testing.

Results and Conclusions

The author does not provide a conclusion, but notes are provided and intended to introduce the knowledge management practitioner to further reading.

Summary

This purpose of this framework is clear and discussion progresses with clarity, however the reasoning and depth of discussion is brief. The knowledge management process is made explicit, and knowledge management activities are limited to the context of organisational change only. There is no indication of development and testing and there is no theoretical or empirical underpinning. Overall, the approach taken is at an introductory level and remains conceptual. Having stated this, the framework still contributes ideas to consider in relation to the evaluation of an organisation's readiness to engage with knowledge management, particularly the Communities of Practice and the extent to which an organisation engages in initiatives such as this to share, create and improve knowledge and learning.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 42	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	3	1	1
Process	5	5	3	1	1
Activities	5	5	3	1	1
Develop & Test	1	1	1	1	1

Zack MH (1999)**Purpose**

The purpose of the framework is made explicit and intended to configure organisational and technical resources and capabilities to gain advantage from codified knowledge. The framework has been developed from a brief review of literature. Although the purpose of this proposed framework is clearly stated, subsequent discussion is not clear or well reasoned. The authors initially present the content of the framework, offer descriptive examples which do not reflect the benefit of the framework per se and follow this by continuing discussion about managing knowledge processes in relation to organisational context and knowledge repositories. There is no theoretical underpinning and although empirical work is indicated, it remains ambiguous.

Knowledge Management Process

The knowledge management process is referred to within the scope of a knowledge management architecture, which has four elements:

1. Repository of explicit knowledge, which contains knowledge as an object, defined as structure and content, and within which knowledge units exist. Knowledge units are linked by the knowledge object and are labelled, indexed, stored, retrieved and manipulated.
2. Knowledge refinery is the process for creating and distributing knowledge contained in the repository and includes a five stage process:
 - Acquisition;
 - Refining;
 - Storage and retrieval;
 - Distribution and presentation.
3. Knowledge management roles are cross-organisational processes and include:
 - Educating the organisation;

- Knowledge mapping;
 - Integrating organisational and technical resources.
 -
4. Information technologies are concerned specifically with the flow of explicit knowledge:
- Capturing knowledge;
 - Defining, storing, categorising, indexing and linking knowledge;
 - Searching and subscribing to relevant content;
 - Presentation of content in a flexible, meaningful and applicable manner across various contexts of use.

The relationship between the overall process (architecture) and processes within are not explicitly drawn out in a clear and understandable way. The author then adds to this with another process referred to as integrative and interactive applications. Integrative applications relate to the sequential flow of explicit knowledge into and from the repository. Interactive applications focus on people and tacit knowledge. There is no reference to theory to underpin this approach and although reference is made to empirical work, this remains ambiguous.

Knowledge Management Activities

Having identified the process (es), the author does not explicitly refer to activities. For example the foregoing identifies processes within processes some of which could be defined as activities and have been addressed in the foregoing.

Development and Testing

The author uses literature in the development of this framework, however discussion and reasoning appears weak. There is no theoretical underpinning and no reference to methodology. The author states that research has been conducted in two case organisations cited, which provide examples of managing explicit knowledge. The

author, however, does not explicitly state that this research was undertaken in the development of the framework and the cases do not reflect use of the framework.

Conclusions

The author concludes by specifically referring to the case organisations stating that organisations that manage knowledge effectively understand strategic knowledge requirements and develop a knowledge strategy appropriate to the business strategy. Organisational and technical architecture is implemented and commitment to the knowledge cycle is evident. Little reference is made to the framework except to indicate that it provides a guide to managing knowledge.

Summary

Overall the purpose of the framework is explicitly stated, but discussion is disjointed and reasoning is weak. There is no theoretical underpinning and empirical work is referred to but remains ambiguous. The knowledge management process is referred to, both as the overall process and processes within the process, which have been considered here as activities. Development has been undertaken through literature, and there is no evidence of testing. This provides another alternative example to consider in relation the structure of a framework.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 42	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	4	2	2	1	1
Process	5	3	2	1	2
Activities	3	2	2	1	1
Develop & Test	3	2	2	1	2

5.4 Discussion

To recap, the approach to this review has been structured carefully by establishing the criteria up front involving a three-stage process:

- the establishment of a set of key words to conduct the initial search from which over 3,000 papers were found. From these, 267 articles were identified as having potential relevance to this research, however, 107 of these focussed solely on technology and technical aspects of information, and were not, therefore, considered suitable;
- an initial review of knowledge management frameworks and a process of elimination using key words from which 35 papers were regarded as having frameworks that were worth serious assessment;
- a systematic review of the remaining and most appropriate frameworks with the help of an evaluation grid that has been developed as part of this work.

The two key objectives of the evaluation were to show that, firstly, there is no single existing framework that addresses KMR, highlighting gaps in concepts and practice. Secondly to identify useful elements and concepts that ought to be in the framework being developed. Objective one was achieved showing that a new framework for the evaluation of an organisation's potential to engage in knowledge management will contribute to knowledge and the shortfall is clearly demonstrated in Table 5.4.1

Table 5.4.1: Total and Average Scores of Frameworks

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Total Scores 1943/3500 (55.5/100)					
Purpose	159(4.54)	139(3.97)	118(3.37)	64(1.82)	64(1.82)
Process	139(3.97)	120(3.42)	108(3.08)	59(1.68)	68(1.94)
Activities	107(3.05)	91(2.6)	82(2.34)	56(1.6)	63(1.8)
Develop & Test	82(2.34)	74(2.11)	73(2.08)	53(1.51)	67(1.91)

Table 5.4.1 identifies overall and average scores for each cell of the evaluation grid. The total score of all frameworks is 1943 of a potential 3500. The figures in brackets represent average scores, and the overall average score per framework is 55.5 out of a possible 100. The highest scoring aspects of the frameworks relate to explicitness of purpose and knowledge management process. The lowest scores relate to theory and empirical work, development and testing. The difference in scores within cells are nominal, and to some extent reflect the close association between approaches and content of the frameworks reviewed. The basis for judgement in distinguishing between the frameworks has been derived from the discussion provided and is, in essence a qualitative decision according to the main focus of this research.

The overall results suggest that for managers wishing to introduce knowledge management into their organisations, there is little to offer that is soundly based and accessible. Papers tend to be over simplistic or too theoretical. Many fail to offer a reasonable set of coherent activities in a connected form that could be described as a holistic framework. Many frameworks tend to focus on one particular aspect of

knowledge management such as intellectual capital or knowledge sharing. It is difficult to find a holistic framework that managers could use to evaluate their own organisation's potential to feasibly consider or introduce knowledge management to their organisations.

Objective two, the identification of useful elements and concepts that ought to be in the proposed framework being developed has been achieved by identifying elements of best practice within the reviewed frameworks, and as such table 5.4.2 shows a further breakdown of scores, from which the highest scoring aspects can be drawn out.

Table 5.4.2: Individual Scores per Framework

	<i>20 = lowest score 100 = highest score</i>	Purpose	Process	Activities	Develop & Test		Theory	Empirical
Abou-Zeid ES (2002)	66	17	17	17	15		4	6
Achterbergh J, Vriens D (2002)	82	23	20	22	17		17	12
Arora R (2002)	39	15	8	11	5		4	4
Balasubramanian P, Kumar N,	50	13	14	13	10		4	11
Bhatt GD (2002)	41	17	11	8	5		4	4
Binny D (2001)	39	17	12	5	5		4	7
Bolloju N, Khalifa M, Turban E	38	14	10	5	9		10	4
Bower WD, Heminger AR	45	15	13	5	12		4	10
Carneiro A (2001).	51	17	12	5	8		4	4
Connell C, Klein JH, Loebbecke C, Powell P (2001)	48	18	18	10	5		7	4

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De Gooijer J (200)	48	19	12	7	10	8	10
Duru Ahanotu N (1998)	50	16	13	16	5	11	4
Escriba-Esteve A, Urrea-Urbieta JA (2002)	60	20	20	5	15	13	4
Firestone JM (1999)	60	7	14	14	5	4	4
Gao F, Li M, Nakamori Y (2002)	43	13	13	12	5	10	4
Goh SC (2002)	37	16	11	5	5	6	4
Hatten KJ, Rosenthal SR	52	14	15	15	8	4	4
Hlupic V, Pouloudi A, Rzevski G	46	18	18	5	5	6	4
Holsapple CW, Joshi KD (2002)	92	21	22	24	25	12	20
Hylton A (2002)	33	11	11	6	5	4	6
Joshi KD (2001)	76	23	15	23	15	16	11
Kamara JM, Chimay JA,	54	18	14	12	10	4	10
Knight T, Howes T	75	20	21	15	19	5	20
Kwan M, Balasubramanian	79	21	21	16	21	4	20
Kwang KL, Pervaiz KA, Mohamed Z	41	11	11	14	5	4	4
Lee JH, Kim YG (2001)	100	25	25	25	25	25	25
McAdam R, Reid R (2001)	47	15	12	5	15	4	4
Merali Y (2000).	47	13	15	5	14	7	9
Mullich J (2001)	20	5	5	5	5	4	4
Newman B, Conrad KW (2000)	44	15	9	15	5	4	4
Pérez Pérez M, Sánchez AM,	56	16	19	12	8	4	9

Pervaiz K, Kwang KL, Mohamed Z	34	10	9	10	5	4	4
Robertson S (2002)	30	8	6	8	8	4	7
Snowden D (@ 1998)	50	15	15	15	5	4	4
Zack MH (1999)	42	10	13	9	10	4	6

The highest scoring frameworks provide specific areas of interest, for example, Achterbergh J, Vriens D (2002) use Beer's (1979) Viable System Model (VSM) to support the diagnosis, design and implementation of knowledge processes, to establish what kind of knowledge an organisation needs to remain viable and how to manage knowledge to achieve this. This is a logical systems approach to knowledge management and reflects the complexity of organising and defining activities to establish a system of managing knowledge. The 5 functions of the VSM and associated activities demonstrate that a systems approach provides a robust underpinning to knowledge management. Holsapple and Joshi (2002) offer a sound methodology based on the Delphi process which provides validation and adds to the credibility of their framework, which relates to the process and activities that should be considered to implement knowledge flow and manipulation. Knight and Howes (2003) introduce a practical framework comprising a set of tools to structure thinking and implementation of knowledge management in an organisation, but contains no reference to theory. Kwan and Balasubramanian (2002) provide a robust system of knowledge management, paying particular attention to the technical interface. Lee and Kim (2001) use a combination of resource based theory and life cycle theory to underpin knowledge management and provide a well reasoned, empirically tested framework.

5.5 Conclusions

Overall, the majority of papers present aspirational frameworks for implementing knowledge management, with sparse theoretical and empirical underpinning. Few consider the readiness and ability of organisations to engage or make assumptions about

organisation's ability and willingness, giving the impression that by using the framework, an organisation will become competent in knowledge management. As a consequence the frameworks do not adequately consider all aspects to effectively implement knowledge management in a sustainable way. As has been established in this research, knowledge management is still an emerging field and until recently the main focus of development has been in the technical domain, retaining the emphasis on speedier information exchange, data storage and explicit knowledge sharing. Tacit knowledge sharing is now gaining greater recognition as practitioners are beginning to experience the limitations of technology and the driving forces to engage with knowledge management relate to people, management and the culture of the organisation.

The foregoing has been demonstrated through empirical work conducted in the University of Luton (chapter 3) and subsequent discussion throughout this research thus far. It has become clear from this chapter that there is no unified approach to knowledge management, but the author is not advocating that there should be one prescriptive approach for the management of knowledge in different organisations. The challenge is to establish a generic framework with an appropriate theoretical underpinning that is understandable and provides guidance for managers in a university to consider successful engagement, prior to implementation and ultimately a sustainable approach.

Such a framework would be strengthened if it were based both in theory and practice and considered the management and human capability as a significant element in the knowledge management process. The kind of framework proposed here should be at a strategic level if it is to work properly, therefore strategy is one area that could offer theoretical underpinning. Systems literature, however, has a lot of strength and potential to offer strategic knowledge management a theoretical basis and critical systems thinking links to learning and knowledge, providing a means to consider whether the right kinds of issues are being addressed. For example, are technological issues and hard processes being debated when the real area of concern is highly cultural and human oriented.

Drawing on Soft Systems Methodology (see appendix 4) this research has been undertaken within an action research paradigm, with the research design evolving during

the process, therefore taking into consideration context and sensitivity to emerging issues. SSM has a learning cycle and knowledge management must be concerned with learning. Furthermore, much of the knowledge management literature as demonstrated here is technically based, whereas knowledge resides with people and evaluating an organisation's Knowledge Management Readiness (KMR) would involve action research.

6. DEVELOPMENT OF CONCEPTUAL FRAMEWORK

6.1 Introduction

This chapter falls within phase three of the research design (6.1.1) and has emerged from the research discussed previously. It focuses in detail on the development of a new conceptual framework.

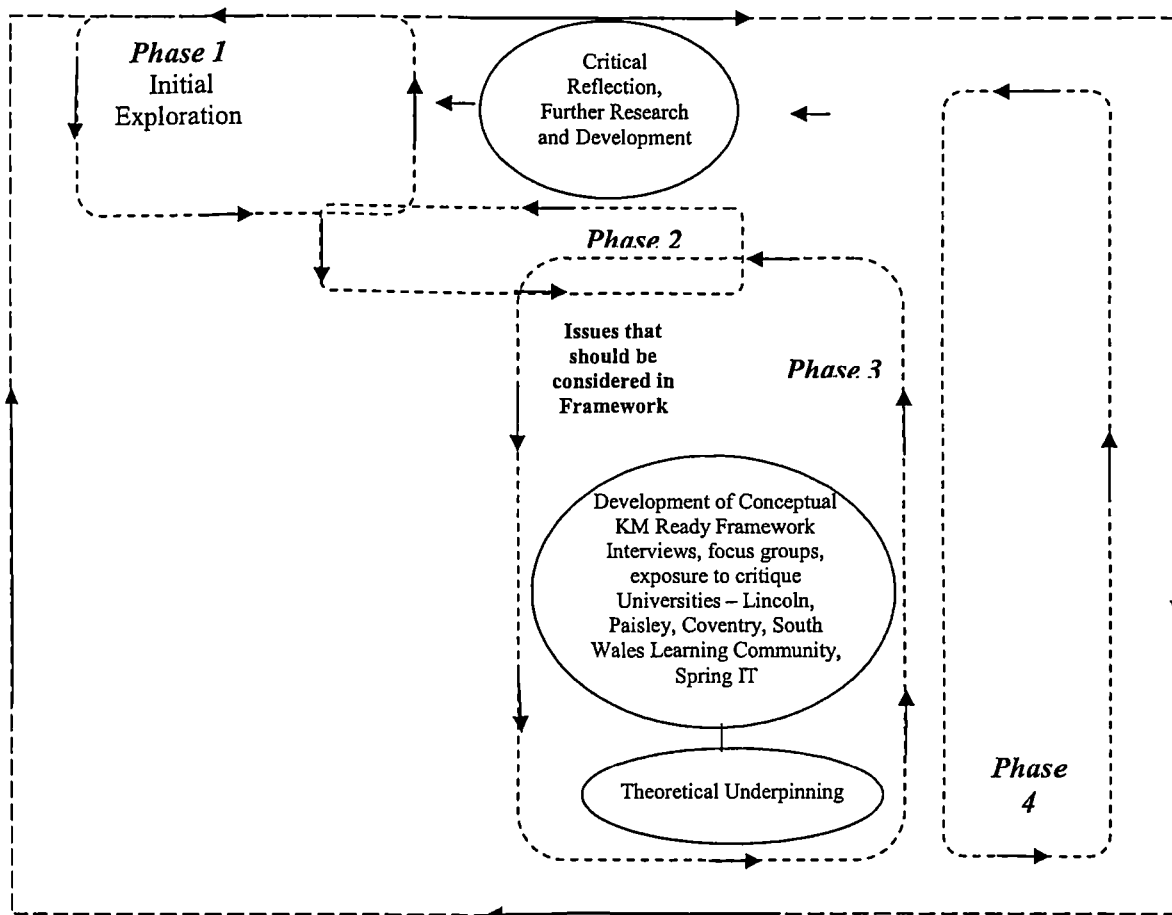


Figure 6.1.1 Research Design Phase 3 (adapted from figure 2.2.1) –Development of Conceptual Framework

This new framework is supported by theory, practice and exposure to critique, offering improvement over the frameworks considered from the literature, as these had weaknesses in these areas.

The proposed framework offers a holistic, critical, high-level strategic approach, in addition to more detailed operational guidance as to how to consider an organisation's readiness to engage in knowledge management. This is in contrast to the reviewed frameworks, which tend to focus on one aspect of knowledge management, for example knowledge sharing, or hard technical aspects. It is also different from other frameworks because it is not prescriptive, but is intended to help empower an organisation to undertake critical self evaluation at both the broad organisational level, group level, and individual level. It is proposed that these key differences from previously published work represent new contributions to knowledge. This chapter discusses the initial framework, the refinement of the framework based on external critique and reasoning, a revised framework and its justification, and within that revised framework a process to facilitate critical self evaluation by an organisation. Chapter nine will provide a discussion of the application of this framework to a case organisation.

6.2 A Framework for Knowledge Management: Version One

Drawing together the learning and information gathered to this point, this section focuses on the actual incorporation of the conceptual framework. The key areas for consideration that have emerged from the research in the foregoing have been clustered and structured in Domains in figure 6.2.1 and within each area identified, a further cascading of Elements are illustrated in figure 6.2.2. The overall model in figure 6.2.1 does not fully reflect the dynamic interaction that knowledge management is within an organisation; it does however offer some indication at this stage of a complex system, with the main emphasis on the human dimension. Section 6.3 will discuss the eventual revision of the framework, therefore addressing objectives 6 and 7, relating to evaluation of the conceptual framework and revision of the framework in the light of the evaluation. This is followed by section 6.4 which will discuss the final Elements of the framework and their justification prior to application and testing in a university.

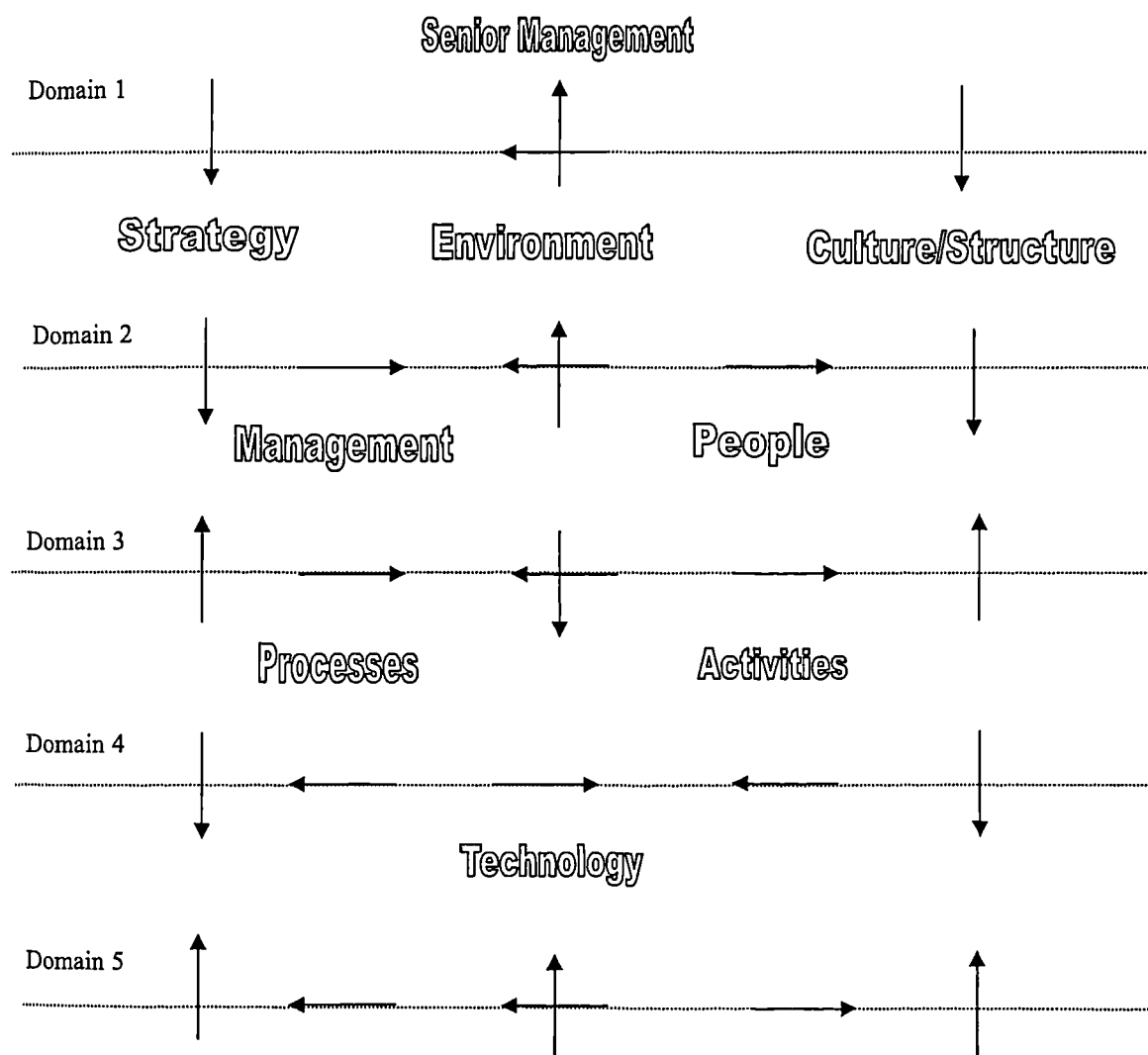


Figure 6.2.1: Framework for Knowledge Management Version One (Domains)

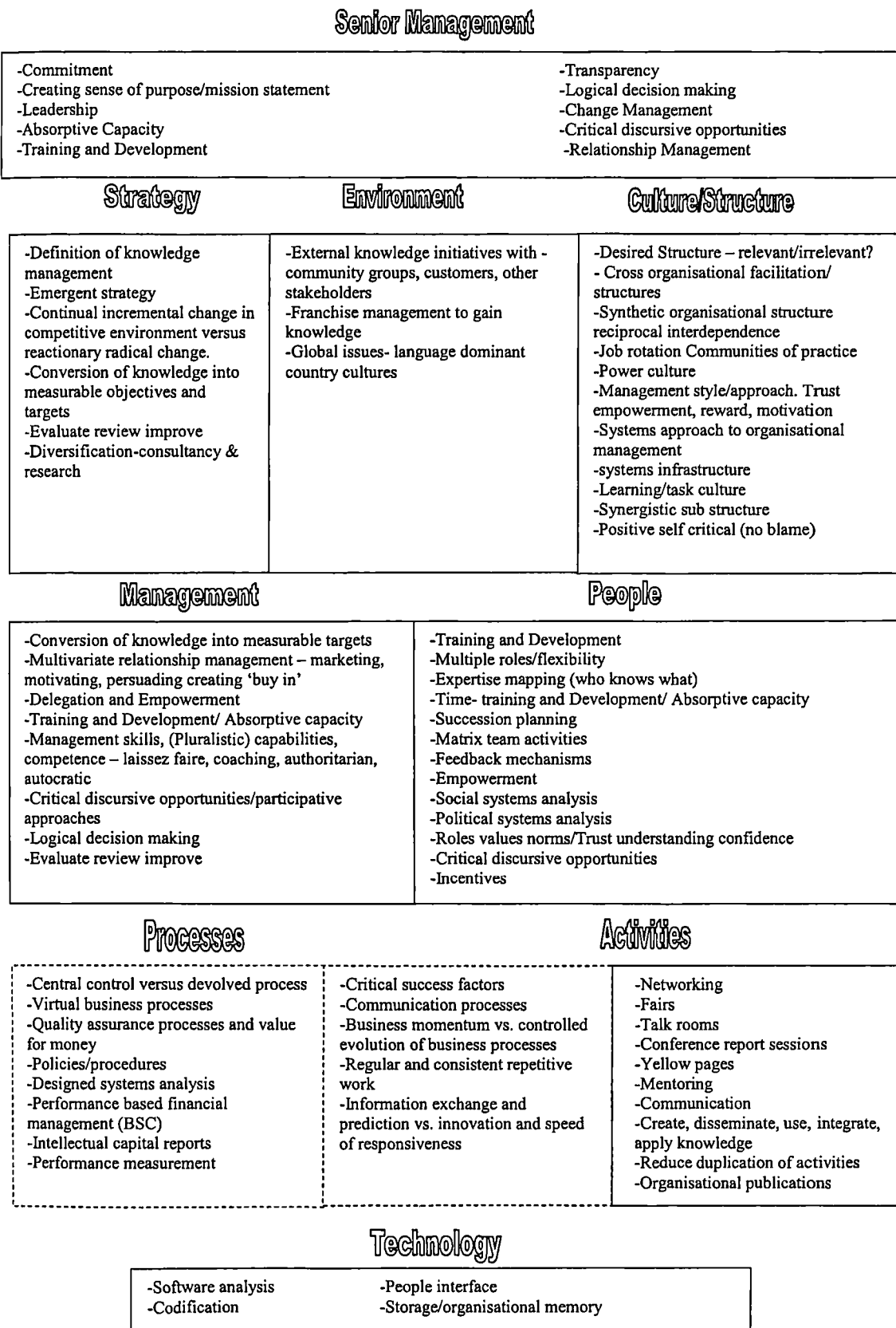


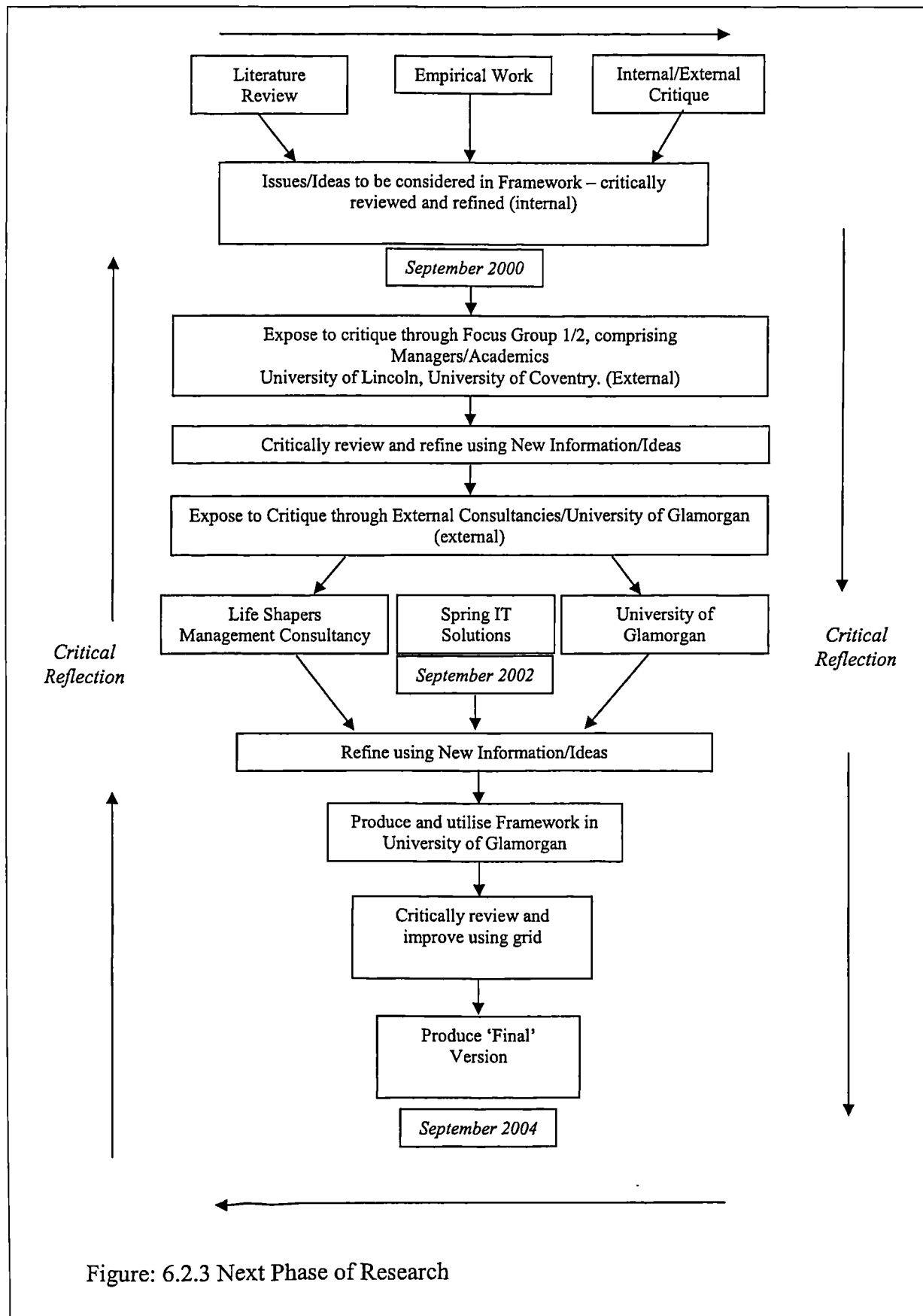
Figure 6.2.2 Elements within the Framework Version one

Looking first at figure 6.2.1, this has been organised into Domains within which figure 6.2.2 identifies Elements supporting each Domain. Domain one is the first step and represents a requirement for commitment from senior management who have the power and position to direct the organisation, whilst bearing in mind the strategic direction, environment and culture, and structure in Domain two. Domain three refers to operational management in relation to attitude, style, competence and the people within the organisation who have the ability to implement knowledge management or obstruct it. Domain four includes the overall organisational business processes, which reflect the organisational infrastructure and activities which are operational. Domain five, which contains technology, is the supporting tool to facilitate the organisational information system and communication. Apart from selecting the appropriate software for sharing information, it is the interface between IT and people that will render chosen software effective or ineffective, therefore the emphasis remains on people.

The rationale for focussing on people comes from the view that knowledge resides with individuals who comprise the organisation. Referring back to the reasoning and discussion in appendix 3 and chapter 4, whilst recognising the impact of structure or infrastructure, ultimately an organisation is a system which brings large or smaller groups of people together to achieve a common goal. This discussion highlights interconnectivity, and the need for holistic consideration and relationships between the different parts of an organisation, not forgetting the potential outcomes. Further, literature shows that the concept of knowledge management continues to develop from a predominantly technological and process oriented system, to a human oriented system with greater recognition of the importance of human resource management, human assets, and intellectual capital.

The arrows in the framework highlight the horizontal and vertical interaction of each Domain, all of which encompass the whole. The framework is not generally intended to be sequential, but for illustrative convenience has been presented in this way.

From the foregoing chapters, figures 6.2.1 and 6.2.2 have undergone changes and the rationale for this will be discussed in section 6.3. The initial breakdown of Elements that have been organised into the Domains of the overall conceptual framework have emerged from empirical research and literature review and include all aspects at this first introductory stage from which further refinement is undertaken through critical reflection and further empirical work. The process of refinement is undertaken by reviewing the structure of the framework's Domains and Elements through critical reflection and reasoning, and empirical work based on feedback from external expertise to justify the inclusion, relocation or exclusion of Domains and Elements from the framework. The framework is then applied and tested. Following this empirical work and refinement, the framework will be considered against the same grid for critical review as was undertaken in chapter 6 to ensure consistency of approach. This phase of research is illustrated in the following flowchart in figure 6.2.3:



6.3 Refinement of the Framework

This section critically discusses the Domains and Elements highlighting the changes made and how those changes have been arrived at. In the first instance changes that involve exclusion or relocation are presented, followed by a summary of the justification of the remaining Domains and Elements. The remaining Domains and Elements are presented in table 6.4.3. This is an iterative process undertaken through internal critical reflection and exposure to external critique and feedback received.

External expertise is derived from interviews and focus groups including technical consultancy, to ensure a view from a technical perspective given the emphasis on people (appendix 8) and focus groups held at Lincoln University (appendix 7), Coventry University (appendix 10) and the South Wales Learning Community (appendix 9), all of which either confirmed the content or resulted in changes to the framework. The changes and issues are discussed as follows:

- i. *The title Senior Management has been changed to Management and Management referred to in Domain three has been relocated to Domain one.*

Management and the Elements in Domain three have been relocated to Domain one because the issues and questions to be considered are similar whether at a senior or operational management level. By keeping them separate results in duplication and unnecessary complexity in the presentation of the framework. Feedback received from the South Wales Learning Community (SWLC) focus group (appendix 9) support this view. It is worth noting, however, that if the organisation undergoing assessment needs to distinguish between senior management and management or any other cohort of staff, this can be undertaken by identifying positions/roles during the actual assessment and subsequent analysis.

Elements within management that have been removed are multivariate relationship management as this is contained within the scope of leadership. Pluralistic capability is

contained within the scope of management style, and conversion of knowledge into measurable targets has been relocated to strategy as part of the strategic process.

ii. *Creating a sense of purpose merged with commitment.*

This has been undertaken based on feedback gathered through a focus group held at Lincoln University (appendix 7). Participants proposed that clarity, purpose and commitment is essential to achieve action and all aspects should be considered together. Literature confirms that management need to build a shared vision for others to commit to as well as committing adequate resources to ensure progress and increase the chances of success with regard to any new initiative.

iii. *Communication has been relocated from Domain four to be included in Management in Domain one.*

Empirical work undertaken in case study one (University of Luton), identifies communication as being an issue in relation to management in particular, and as an Element that emanates from management throughout the organisation, affecting learning and cross organisational working practices. It is recognised, however, that communication is key to all aspects of organisational life and feedback from the Lincoln University Focus group (appendix 7) propose the concept of designing conversation for action and establishing sharing structures that enable communication, which the group felt usually derives from management action and commitment. The focus group with the South Wales Learning Community (appendix 9) identifies the need to avoid silos and as such considers horizontal and vertical communication and the need for a two way process, which they place in the context of management.

- iv. *Transparency – removed*
- v. *Risk analysis - added*

Transparency has been removed because it should be considered in the context of communication and the extent to which information communicated can be transparent. Levels of risk in relation to what is communicated and when, should also be considered and in this sense transparency is an explicit consideration in the context of risk assessment and remains a general consideration for an organisation irrespective. Risk analysis has been added as an extension or supporting tool to the framework, which can be initiated following any decision to engage with knowledge management and how knowledge management might be rolled out in the organisation.

- vi. *Emergent strategy - removed*
- vii. *Continual incremental change in competitive environment versus reactionary radical change – removed.*

In both cases, whether the strategy is emergent or radical may change according to circumstances at a given time in the organisation. Neither term offers any real measure in relation to assessing an organisation's readiness to engage with the concept of knowledge management, but reflects more on the context and circumstances in which knowledge management is driven. For example, if the competitive environment is fast moving, the need for controlled, fast responsive knowledge exchange will be higher than if the environment is stable.

- viii. *Franchise management to gain knowledge – relocated.*

Franchise management has been relocated to external knowledge initiatives because the external relationship with franchises is synergistic with other types of external interactions and relates to knowledge transfer, similarly with *diversification*.

ix. *Diversification – consultancy, research and development- relocated*

Diversification – consultancy, research and development has been moved from the strategy Domain to external environment Domain because such activities represent the external business interface.

x. *Internal environment – added.*

Internal environment is added because the physical opportunity to share tacit as well as explicit knowledge within the organisation is a key factor and the right type of environment to facilitate this is advantageous. For example, an organisation that does not have the physical opportunity to exchange ideas, concepts, experience and knowledge in an informal way may not be as effective as an organisation that does. It could be argued that virtual opportunities can facilitate this, but technology does not create the enthusiasm and exchange that an interpersonal dialectic process can. It is still important however to give due consideration to virtual opportunities for fast and responsive exchange of information, therefore *technology* is considered in the framework as another aspect of this physical facilitative opportunity and moved from Domain five, to be included in internal environment.

xi. *Culture and structure relocated to a cross Domain position.*

Literature and empirical research gathered during a focus group at Coventry University (appendix 10) confirm that since culture and structure is derived from all other aspects of the organisation such as management, people and process, it should not be set within one Domain of the framework, but cuts across all Domains and Elements. Specific Elements that were identified within culture have been relocated to other Domains: Job rotation and communities of practice have been moved to people in Domain three. Management style/approach has been moved to Management in Domain one.

- xii. *Empowerment relocated from people in Domain three to management in Domain one.*

Empowerment has been relocated because it is commonly regarded as that which can be given by managers to the workforce and is dealt with as such under management.

- xiii. *Social Systems Analysis removed*

This Element has been removed because it reflects more accurately how the framework could be used and the ethos of assessment, rather than a specific Element that should be within a framework. Appendix 4 explores Soft Systems Methodology (SSM) within which a model of Social Systems Analysis for use in SSM is discussed. The model shows three separate Elements which are roles, norms and values. Roles relate to the position in the organisation, relationships with others, job content and external links. It is recommended that the user of SSM should conduct a social systems analysis after every interview, conversation or review of related documentation. Equally, when using the framework to evaluate an organisation's readiness a similar approach could be taken.

- xiv. *Political Systems Analysis removed*

As with 12 above, Political Systems Analysis has been removed because it is more relevant to the ethos and use of the framework than a specific Element. For example, if the concept of knowledge management involves innovation and creativity to think and produce beyond individual experiences, then social, cultural and political domination should be key considerations. The Political System Analysis considers how power is obtained and disposed, and how that power is utilised in relationships between different interest groups. The political dimension is unavoidable in any human situation as individual perspectives, agendas, interests and positions of power will influence every aspect of a social type investigation and balance between these Elements is important. When referring to political analysis, SSM is particularly concerned with power; and

politics is power in the context of managing relations between variable interests. This exposes the overall potential sensitivity of knowledge management in an organisation.

xv. Designed Systems Analysis removed

Designed Systems Analysis has been removed because it is more important to the generic theoretical underpinning rather than the content of the framework. Empirical work and the literature review demonstrates that designed systems are a key activity in organisational life, for example designed structures, job design, network designs, systems designs and process design, or in this case a knowledge management framework. Checkland (1993) proposes that designed systems can be physical or abstract and describes the key factors which comprise it, their current condition, relationship with external factors which affect a system and the condition of those external factors, and as such this framework, in evaluating the organisation's readiness to engage in knowledge management is exploring these areas through the various Domains and Elements. In addition, a system is regarded as an entity that receives inputs i.e. responses about the organisation's current state of knowledge management, and produces outputs i.e. a measurement of the current state which is intended to offer guidance or expose Domains and Elements that may require intervention and future action to improve.

Designed systems are relevant to physical and human activity systems (explicit and tacit Domains of knowledge management). The relationship between the two is that human activity systems are less tangible, yet clearly observable. The human activity system is a combination of activities that are linked together in a coherent and ordered way, but can not be considered in isolation as they are closely related or associated with designed abstract systems i.e. the dynamic nature of knowledge management in the organisation. The structure, processes, procedures, etc are designed abstract systems which represent the order and conscious product of the human mind and can be flexible according to the speed of decision making and communication in the organisation (i.e. how the organisation generally operates within the context of knowledge management).

Designed physical systems are easily identified solid systems such as structure within which change may be less easy to achieve or radically alter in any significant way. Human activities direct abstract and physical systems and are undertaken within and around designed systems abstract and physical. The significant difference in the two approaches is that designed systems may have limited outcomes, whereas in human activity systems freedom of choice results in unpredicted outcomes.

The 'owner' or analyst using a comprehensive knowledge management framework should consider physical, abstract and human activity systems, which provide different perspectives in a multidisciplinary approach. This approach to the implementation of the framework strengthens the theoretical underpinning derived from Checkland's Soft Systems Methodology (1981). For example, relating human activity and designed systems to knowledge management, in the case of human activity, employees should know of their individual involvement as important to the purpose of a knowledge management System, and as with any organisation will define the mission or purpose, contextualising it according to their roles. Designed systems are made with fitness for purpose in mind so to design a system within which the concept of knowledge management can exist means that the purpose must be clear, therefore an appropriate definition of knowledge management for higher education may be necessary. A strategic knowledge management system that is fit to achieve the purpose and one which recognises the extent of flexibility and influencing variables, may be an overly complex and extensive model if it is to address all aspects of the organisation. However, by reducing the complexity to a holistic position, a generic core framework appropriate to evaluate the entire organisation may be achieved, and as with the ethos of Soft Systems Methodology it may be adapted and used in different ways in different circumstances.

Drawing on empirical work and the literature review, it is clear that managers design both the human activity and abstract systems in the organisation, however, the extent to which one impacts on the other is sometimes lost. This is apparent in the University of Luton case study (chapter 3) when considering the inconsistencies in policy and procedures. Learning from this, it is important to consider all aspects of required change that should

be considered when evaluating an organisation's readiness to engage with knowledge management, and re-emphasises the importance of a holistic approach to the concept of knowledge management in an organisation. However, as indicated, for a full and comprehensive consideration, it remains with the analyst to undertake this depth of analysis.

xvi. SWOT analysis added

Feedback from the University of Lincoln (appendix 7) identifies that a SWOT analysis (assessment of strengths, weaknesses, opportunities and threats) would be beneficial in the context of knowledge management to establish the organisation's current position, followed by a risk analysis in relation to the type and nature of knowledge sharing that may be proposed. If applied in isolation, the SWOT analysis is unlikely to offer guidance that is appreciative of the complexity of knowledge management, but does provide an opportunity to summarise the outcome of an organisation's evaluation after which a risk analysis will help to establish what can feasibly be achieved.

xvii. Knowledge Bank added to Domain four

Consideration should be given to the establishment of a knowledge bank, based on the principle of filtering, depositing and withdrawing knowledge. This has been included as an Element in Domain four under activities, because activities are the initiatives and actions that may be undertaken to support knowledge management and a knowledge bank is synergistic with other Elements in this Domain.

xviii. Activities changed to Communication Activities in Domain four

Activities have been changed to communication activities because all Elements within this Domain relate specifically to the types of activities that facilitate organisational knowledge sharing, learning and creativity. This is different from communication

identified in the management Domain because that reference to communication is at a strategic level and is intended to explore the communication culture.

xix. Culture relocated

Further feedback from the University of Lincoln (appendix 7) identifies that culture and underpinning systems are key to the success of knowledge management, therefore an assessment of culture needs to ascertain whether it is supportive of the concept of knowledge management or not. Rather than identifying culture as a separate issue, it is expected that a key result in applying the framework will offer an indication of the type of dominant culture emanating from the organisation. Culture, therefore, has been moved to a generic position in the framework so that it remains a general consideration rather than a specific Domain.

xx. Asking the right questions for evaluation - added

In terms of evaluating the organisation, feedback from the University of Lincoln (appendix 7) placed significant emphasis on knowing what and knowing how. For example, knowing what information in relation to marketing such as customer information, international markets, competitors, sub markets. Knowing how to take action which enables the receiver to carry out specific action to the benefit of the organisation, rather than having information and knowledge for the sake of it. Placing this view in the context of organisational evaluation of readiness asking the right questions is an important requirement in identifying what currently happens and what ought to happen for an organisation. SSM proposes that desirable and feasible changes are considered through debate with potential changes or improvements compared to the real world, for example what actually happened and what could have happened. This research explored and developed a framework in a neutral, balanced and critical way in a multi-methodological manner, drawing from Soft Systems Methodology and enhancing that by applying a critical element during the course of development of the framework.

Drawing on Skyrme and Amidon's (1997) six questions of investigation provides a structured approach to inquire about knowledge management:

Know How – This relates to how well the work force knows to get things done, which can be demonstrated through organisational procedures, manuals and other written forms, but also a large proportion of information is gathered through experience and tacit knowledge.

Know Who – This relates to networking and knowing who to ask about a specific subject area or problem situation, either internally or externally.

Know Why – This is the understanding and contextualisation of knowledge in relation to purpose, mission, vision, strategic direction of the organisation at one level, and simple procedure at another. Knowing why a particular action is undertaken in a given circumstance improves understanding of roles and contribution to the organisation and to some extent assists in improving the quality of the experience, therefore performance.

Know That – This relates to instinct or intuition and includes the common language of professionals and communities in the same arena, for example, doctors, IT experts, scientists. It is the sense of knowing that an action undertaken is the right course of action. Such knowledge is built up through formal education, training and experience.

Know When – This relates to timing and picking the right moment to take action, for example, whether it is the right time to promote a new product on the market or diversify.

Know Where – This relates to the ability of the workforce to locate the information they need either through the use of IT or paper based functions.

The framework has, therefore, been extended to incorporate these questions as part of the evaluation of the current situation and to initiate discussion within the organisation to

explore the stage of readiness that the organisation may be at. This is illustrated in Table 6.3.1 and discussed and reviewed in section 6.5.

Table 6.3.1 Evaluation Matrix

	Know How	Know Who	Know Why	Know That	Know When	Know Where
Definition of knowledge management	Definition of knowledge management for the organisation. This should be undertaken in partnership with management and key staff to ensure buy in and understanding in the context of the organisational purpose, strategic direction and values.					
Management	How well does management know how to get things done either through formal procedures or through the experience and tacit knowledge of others as well as selves	Does management know who to network with internally and externally to address a specific problem, issue, idea etc	Does management have a position that can contextualise the knowledge to apply to purpose, mission, vision strategic direction	Does management have the appropriate education, training, experience to manage knowledge in the organisation and use the right type of language to express the organisational direction	Does management recognise and take action at the right time to maximise on opportunities	Does management have the ability to locate the information they need to inform decisions.
Strategy	Is the strategy explicitly presented through formal procedures, manuals or other written forms	Does the strategy clearly guide the organisation in a cross cutting and participative way	Is the strategy appropriately contextualised with direction and operational procedure presented in an understandable format	Is the language used in the strategy understandable to the broader organisation	Does the strategy explicitly identify key dates to undertake action in the context of the competitive environment	Is the strategy made available at an easy accessible location for the broader workforce to engage and contribute to it?
Internal Environment	Is the physical internal environment conducive to supporting the workforce in taking action to share information, experience and tacit knowledge Is technology appropriately designed in an easily accessible way	Does the internal environment provide space for networking and informal interaction to increase 'know who' opportunities. Does the ICT identify individuals who will make access and the interface with IT	Does the internal environment provide opportunities to engender understanding about roles, contributions and quality of working experience. Does the Technology facilitate the understanding of roles and contribution to the organisation	Is the common language of the organisation displayed in communal areas to engender a culture, instinct about the overall ethos? Is the language used about and within the technological framework understandable and user friendly to the broader workforce	N/A	Is there a physical space where the broader workforce can easily locate information needed either through IT or paper based functions? Is the technology constructed with the user in mind facilitating easy access of information within
						<i>Continued</i>

External Environment	How well do key players in the organisation know the local, regional and global environment to take action to the benefit of the organisation	Are external contacts and networks coordinated to avoid duplication of effort and ensure an efficient approach	Is the knowledge gathered externally understood and contextualised in relation the organisation's purpose and strategic direction, therefore explaining why a particular relevant action may be taken?	Has the organisation benchmarked internal education, training and experience against the external environment to ensure intellectual capability, instinct and language provides competitive advantage	Does the organisation know when to take action to improve competitive position relative to the external environment	Does the organisation know where to locate external information that will advantage the competitive position?
People	How well does the general workforce know how to get things done either through procedures, manuals experience and tacit knowledge	Does the workforce know who does what according to specific subject areas	Does the workforce understand their role and contribution to the organisational strategy and vision and why particular action is taken	Does the workforce understand the language used by the organisation? Is their education, experience and training at an appropriate level for their role	Does the workforce know the right time to undertake action	Does the workforce know where to locate information needed though the use of IT or paper based functions
Processes	Are the processes made explicit in written form and to what extent do these have to be translated in a discretionary way	Have individuals been identified who are responsible for various processes	Do processes include any explanation of roles and contributions to the specific areas	Is the language used in process manuals presented with clarity	Do processes identify timing for actions	Are process manuals easily accessible either through IT or paper based functions
Activities	How well does the workforce undertake activities to achieve action	Do activities identify individuals responsible for action	Are activities relevant to the organisational purpose, strategy, direction	Is the activity the right course of action and effective for the organisation	Are activities undertaken in a timely manner	Are activities easily accessible to staff who want or need to participate

xxi. *Structure – relocated (see also xi and xix)*

Discussion and reasoning in chapter five suggests that any kind of structure can form an organisation, but if the culture is such that cross organisational sharing and learning is inhibited, the concept of knowledge management is less likely to be successful. Management style and communication are essential to ensure success in knowledge sharing and cross organisational working. Furthermore, it would appear that traditional structures are diminishing at a time of increasing technology and virtual working highlighting tensions between the need for centralised technology and standardisation, and a culture to facilitate a more human relations approach which engenders devolved responsibility, opportunity, knowledge creation, sharing and utilisation. It is considered, from this discussion, that the attitude of management and culture emanating from management is more important than structure, though structure should not be disregarded.

Structure and culture was explored during the focus group conducted at Coventry University (Appendix 10). The argument presented was that culture should be a generic component of the framework which emanates from every aspect within the overall framework. It should not be viewed as contained within one Domain. Discussion continued about the form of structure and the recognition that management in an organisation set the structure, ambiance and culture; therefore it is the influence of management that has a significant impact on the success or failure of a broad organisational concept such as knowledge management. The South Wales Learning Community (appendix 9) paid significant attention to this issue discussing the influence of management over structure and culture, pointing out that the structure may remain the same, but how an organisation functions will change according to the management style/approach.

- xxii. *Critical reflection in the overall process of evaluation has been explicitly incorporated.*

Critical reflection can be undertaken at a group, individual, peer, or subordinate level. The concept of critical reflection in the assessment process provides the opportunity for different perspectives to be fully considered and offers a balanced approach to the potential results. This is illustrated in the refined framework in figure 6.4.1 by arrows showing a cyclical process and is discussed further in 6.4.

6.4 The Revised Framework and its Justification

All changes identified in the foregoing have been incorporated into a revised framework illustrated in figures 6.4.1 (Revised Framework, Version Two) and 6.4.2 (Elements within Domains, Version Two) and are summarised in table 6.4.1. This is followed by table 6.4.2, which summarises the justification for including the remaining Domains and Elements:

Table 6.4.1: Summary of changes made to framework

<i>Definition of knowledge management added.</i>
<i>The title Senior Management has been changed to Management and Management referred to in Domain three has been relocated to Domain one.</i>
<i>Creating a sense of purpose merged with commitment.</i>
<i>Communication has been relocated from Domain four to be included in Management in Domain one.</i>
<i>Transparency – removed.</i>
<i>Risk Analysis – added.</i>
<i>Emergent strategy – removed.</i>
<i>Continual incremental change in competitive environment versus reactionary radical</i>

<i>change – removed.</i>
<i>Franchise management to gain knowledge – relocated.</i>
<i>Diversification, consultancy, research and development – relocated.</i>
<i>Internal environment – added.</i>
<i>Culture and structure relocated to a cross Domain position.</i>
<i>Empowerment relocated from people in Domain three to management in Domain one</i>
<i>Social Systems Analysis removed.</i>
<i>Political Systems Analysis removed.</i>
<i>Designed systems analysis removed.</i>
<i>SWOT analysis added.</i>
<i>Knowledge Bank added to Domain four.</i>
<i>Activities changed to Communication Activities in Domain four.</i>
<i>Culture – relocated.</i>
<i>Asking the right questions for evaluation-added.</i>
<i>Structure – relocated.</i>
<i>Critical reflection in the overall process of evaluation has been explicitly incorporated.</i>

Table 6.4.2: Justification for Remaining Elements in Framework

<i>Domain 1</i>
<p>ORGANISATIONAL WORKING DEFINITION OF KNOWLEDGE MANAGEMENT</p> <p>Summary of justification for Definition of knowledge management</p> <p>(Sections: 1.1, 4.7, A4.3, 5.2, 5.5 appendix 9)</p> <p>This section discusses the view that has emerged during this research which demonstrates that knowledge management has many definitions according to the perspective and discipline of the individual or organisation that engages with the concept. Each discipline approaches knowledge management with a different perception, for example, information systems focus heavily on technology, human resources take an individual and organisational learning approach, and intellectual assets focus on the explicit capture and registration of knowledge. Specific organisation type definitions of knowledge management have been offered by Murray and Myers (1997), MacDonald (1999), KPMG (1999) Nonaka and Takeuchi (1995).</p> <p>Evidence suggests, that there is no single unifying definition or approach but principles and content that encompass the whole and the author's definition involves people, processes, activities, technology and the broader environment that enable the identification, creation, communication or sharing, and use of organisational and individual knowledge for competitive advantage.</p> <p>With this in mind, rather than taking a prescriptive approach, each organisation would be expected to come to its own view as to what it means by knowledge management. Although the author has included a view emerging from the research this is for example purposes only. It is not intended to prescribe how any particular organisation should view knowledge management. However, if an organisation were to view knowledge management in a radically different way from that presented here, the value of the use of the framework would have to be questioned.</p>

It could be construed that the management of knowledge already occurs inherently to a greater or lesser extent in the general business of most organisations, but the actual concept and ethos of knowledge management and explicit awareness of what it entails may not be fully recognised. An appropriate organisational definition, therefore, will help to create a focus and achieve ownership and commitment.

Given that definitions of knowledge management will differ according to the type of organisation, as well as disciplinary base of an individual. It seems appropriate to ensure a participatory approach in the establishment of a generic and understandable definition relevant to the direction of the organisation. This would need to be established in the first instance to clarify the vision of knowledge management that the organisation would be assessed against and without a realistic and feasible vision, committed to by management, the organisation will not be able to create 'buy in' from the workforce to implement.

Drawing on literature and theory and applying reasoned discussion, Hlupic et al (2002) assert that participants within a knowledge management system have their own conceptual structures and definitions of the world which are carried out through social constructs from which rules are developed through social interaction. This emphasises the importance of presenting a definition to the broader workforce to focus the direction. Kamara et al (2002) propose defining the knowledge management problem through the use of a Problem Definition Template (PDT). McAdam & Renee (2001) take a socially constructed approach because of the breadth of definition of knowledge and the intrinsic link with the social and learning processes in organisations. Considering Ulrich's (1983) perspective, decisions have to be made to establish a relevant definition, however this is subjective and may therefore change as practical learning and evidence emerge or perspectives and various definitions show synergy which could lead to an alternative definition.

In the context of systems thinking, designed systems are made with fitness for purpose in

mind so to design a system within which the concept of knowledge management can exist will require the purpose and mission to be clear. At the outset, the concept of knowledge management for an organisation may appear chaotic, but by taking a traditional analytical reductionist approach chaos can be simplified and complexity separated to engage participants to come to an understanding. But in this process of evaluating an organisations readiness to engage with knowledge management it may be inadequate to progress without recognition of the inseparable and subjective form that knowledge management takes and this framework, whilst presented in an hierarchical sequential manner, is not intended to be applied as such, but intended to underpin and guide the relevant definition and mission in a dynamic and evolutionary manner.

Domain 2

MANAGEMENT

Summary of justification for Creating sense of purpose/mission statement and commitment (Sections 3.3, A4.3, 5.2, 5.5. Appendix 1)

Management needs to commit time and resources to develop new organisational capabilities, communications and information technology to improve the quality and flexibility of the organisation. Feedback from empirical work suggests that a lack of commitment can inhibit the organisation's ability to improve internal communications and to engage with knowledge management. Although management commitment alone is not enough to secure success, drawing on theory derived from learning organisations, management must show commitment to build a shared vision and sense of purpose to actively cultivate positive organisational commitment rather than reluctant compliance. Lee and Kim (2001) Knight and Howes (2003) Lehaney et al (2003) emphasise the importance of organisational commitment to a new approach such as knowledge management but, with the exception of Lehaney et al, do not explicitly emphasise the importance of management commitment. Lehaney et al (2002) does recognise this when discussing the implementation of a knowledge management system as part of an implementation project. This framework is different in that it is intended to evaluate what needs to occur prior to implementation and is empirically and theoretically underpinned.

Summary of justification for Management style/approach including Trust, Delegation, Empowerment

(Sections 1.1, 2.2, 2.3, 3.3, 3.4, 4.3, 4.5, 4.6, 4.7, A3.2, A3.3, A3.4, A3.5, A3.6, 5.1, 5.3, 5.5, Appendix 1)

Management style or approach has a crucial impact on the extent to which an organisation may be successful in embracing the concept of knowledge management. Empirical evidence to underpin this demonstrates the importance of honesty, trust, respect, empowerment, consultation, teamwork and equal opportunities, all supportive of the knowledge management ethos. Drawing on management theory, and reviewing knowledge management literature, all explicitly identify management approaches that encourage, motivate and empower staff. Parlbay (2000), Davenport and Prusak (1998) and Senge (1992) describe the need for trust and confidence throughout the organisation, necessary to foster the appropriate culture for knowledge sharing. They include issues such as value and recognition, feedback on performance, empowerment and authority, participation in decision making, consultation, effective delegation etc. However evidence gathered from empirical research suggests that what is recommended in theory is not always applied in practice. For example, successful delegation requires the ability to communicate, share, and inspire confidence and support to succeed. Mann (1999), however, suggests that some managers retain activities because of insecurities, inability to trust others, which result in poor management generally, and low morale amongst the workforce. For knowledge management, this inability to share information or explicit and tacit knowledge is a significant obstruction to progress in an organisation and is an important component in the evaluation of an organisation's readiness to engage with knowledge management.

Delegation and empowerment are synergistic concepts. Empowerment is regarded as an important motivator in modern organisations and management practice. Flannery et al (1996) however point out that evidence suggests thinking and theory are more advanced than practice. Peters and Waterman (1988) promote shared values, experimentation and empowerment of the workforce. Management style, approach, delegation and

empowerment do not appear to have received adequate attention in the frameworks reviewed and currently available to the practitioner. This framework, therefore addresses this gap as well as being empirically and theoretically underpinned.

Summary of justification for Leadership

(Sections 3.4, 4.3, 4.7, A3.2, A3.5, A3.6, A4.3. Appendix 1)

Empirical evidence suggests that time to lead is an important factor. Managers that do not take the time to engage with staff will find increasing levels of demotivation, lack of leadership, and poor performance. Additional empirical evidence underpinning the importance of leadership is derived from a management development seminar conducted by the Author which identifies lack of leadership skills as being a key problem in the University of Luton case study, without which 'buy in' from staff is difficult to achieve. In the context of learning theory, Senge (1992) identifies the need for strong leadership skills to bind people together in a sharing environment. In relation to management theory, Mullins (1996) raises social issues including leadership as part of a human oriented system. Goh (2002) explicitly recognises the importance of leadership to achieve effective knowledge transfer; however this is neither theoretically nor empirically underpinned. Knight and Howes (2003) identify that leadership includes responsibility to deliver a knowledge management programme, though this is not theoretically underpinned. The place of leadership in this framework is underpinned by theory, empirical work, literature and reasoning.

Summary of justification for Logical Decision Making

(Sections 2.3, 3.2, 3.3, 4.3, A3.4, A4.2, A4.3, A4.4, 5.5).

The literature review identifies that external drivers such as HEFCE/W impinge on decision making and knowledge management and forms an important part of the environment in which Higher Education functions. Empirical evidence suggests that there is inadequate consultation between senior management and the workforce on decision making generally. Considering this in the context of theory, from a systems thinking perspective (Checkland 1993), senior management decisions in particular impact across the organisation vertically, horizontally, in the present and the future. The decision making process determines how effectively individuals will absorb knowledge

collectively, which then impacts at the organisational level. Drawing on management theory, a senior manager's ability to delegate and empower staff to make decisions at an operational level is an important motivator (Mann 1999) and could therefore contribute effectively to the knowledge sharing process.

Gao and Nakamori (2002) offer a systematic perspective on knowledge management providing a toolbox for practical knowledge users and draw on systems thinking to underpin this, indicating that this approach could be used as a lens to inform decision making and facilitate knowledge sharing, however this has not been empirically tested nor does it explore the organisational type conditions necessary for success i.e. evaluating an organisations readiness to undertake such a systematic approach. Similarly Balasubramanian et al (1999) refer to decision making at the implementation stage but this is not theoretically underpinned. Gao and Nakamori (2002) recognise the importance of senior management decisions to identify the goals of a knowledge management system, and the power and politics involved. They do not, however, discuss power and politics further to establish what the issues might be. Bolloju et al (2002) introduce an approach for integrating decision support and the knowledge process to build an enterprise decision support environment. This is based on decentralisation of decision making, correlates with empowerment and is underpinned by decision support theory. There is no empirical work to underpin Bolloju et al's work and the links with knowledge management remain weak. Snowden (2000) explores the knowledge process in relation to tacit and explicit knowledge and highlights how decision making creates an image of information flows in an organisation, from which results can be mapped linking different decision processes, but there is no methodology to underpin this. Joshi (2001) looks at decision making in the context of knowledge management behaviours. Joshi's work in this specific area is both theoretically and empirically underpinned, however, the overall framework that is finally produced is not tested nor does it reflect whether an organisation would be ready to engage with knowledge management. Hatten and Rosenthal (2001) refer to decision making in the context of corporate strategy and knowledge management processes, but there is no evidence of theory and reasoning

remains weak. There has been a significant amount of focus on decision making in the literature, management and organisational theory, and systems theory that this Element of this framework can draw from. The differentiator here is that the overall framework as well as this Element will be tested and developed further to refine the relevant approach for evaluating the readiness of an organisation to engage with knowledge management and as such consider an appropriate approach for an organisation to explore decision making in support and of knowledge management.

Summary of justification for Absorptive Capacity
(Sections 4.1, 4.5, A3.6)

The theory of absorptive capacity is discussed by Cohen and Levinthal (1990) and described as the ability of individuals to absorb knowledge collectively which impacts at an organisational level highlighting that organisations with a low absorptive capacity will have difficulties managing internal and external communications and knowledge flows. Cohen and Levinthal appear to imply a bottom up perspective, with no reference to the absorptive capacity of a senior management team in particular. The reason for including absorptive capacity as an Element in this particular Domain is because if an organisation is generally high in absorptive capacity, but the senior management team is low, similar problems in managing internal and external communications and knowledge flows are likely to emerge irrespective. This view is underpinned by empirical evidence gathered in the University of Luton case study. It is important, therefore for senior managers to consider this issue specifically and be prepared to undergo training and development and make time with open mindedness to new ideas and knowledge which then encourages, influences and engenders increasing absorptive capacity throughout the workforce beyond a bottom up approach.

Summary of justification for Training and Development
(Sections 3.3,3.4,4.2,4.6,4.7,A3.2,A3.3,A4.3,5.4 Appendix 1)

From the literature review, HEFCE recognise the need for more focussed and appropriate training and development which they demonstrate by making available funding for initiatives such as “Good Management Practice” (Aug 99/54). Since HEFCE promote knowledge transfer, sharing and collaboration such management

practices should encompass this. However, a common problem in Higher Education appears to be time to undertake personal training and development at every level. This is empirically underpinned from research undertaken in the University of Luton case study. Despite the introduction of a 360 degree assessment exercise and the opportunity to partake in management development activities, many senior managers experienced difficulties finding the time. Evidence suggests that it is particularly relevant in Higher Education for senior managers to consider management development because many have been promoted to management positions as a direct result of academic performance and technical expertise, not management capability and have not adequately trained as managers. Drawing from organisational management theory, if the right management approach to the concept of knowledge management is to be established, an increased awareness of the impact of different styles in the context of knowledge management would support and engender the right culture and working practice thus increasing the chances of success in knowledge management.

Considering organisational learning theory, the concept of knowledge management is synonymous with learning organisations and contributes to implicit and explicit development, both organisational and individual. Learning from local, regional, national and international experiences, sharing, contextualising of new knowledge and plans to take action are all synonymous with training and development (Davis and Davis 1998, Senge 1992). Further, the importance placed on training and development can reflect the perspective that senior management may have of their own intellectual property and the intellectual assets of the organisation. If so senior managers should lead by example and invest accordingly (Liinaken 1999). Binny (2001) recognises the importance of management development through the development of tacit knowledge and use of communities of interest to engender a learning culture. Knight and Howes (2003) refer to training and other analytical tools to draw out activities necessary to meet the knowledge management process. In both cases, however, this relates to implementation and lacks either empirical or theoretical underpinning that this framework provides.

Summary of justification for Change Management, Adaptability/Multiple Roles/Flexibility

(Sections 1.1, 3.1, 3.3, 3.4, 4.2, 4.3, A3.2, A3.4, A4.3, A4.4, 5.2, 5.4)

Change management is a significant factor in organisations, and this Element is empirically supported through research, which confirms that in today's competitive environment, the ability of managers to actually manage change was criticised (University of Luton, Spring IT). This resulted in the University of Luton taking action to improve by engaging in a holistic change management programme to establish an organisational culture that embraces cross organisational working practices, which could prepare the organisation for knowledge management. A specific change management focus group facilitated as part of this research identified key factors that managers would need to consider. These included staff's feelings of self preservation, communication, a perception of change as being destructive, increased levels of anxiety, disbelief, mistrust.

Staff attitudes such as this are an important measurement of the ability of an organisation to engage with knowledge management and can reflect the adaptability and flexibility of the workforce in a dynamically changing business environment (Barnett 1994, Ainley 1994, Zhang and Sharifi 2000, Warner 2000, Despres and Chauvel 2000). The evidence gathered from the University of Luton case study suggests that weak change management to support adaptability and flexibility is directly connected to the systems and procedures inherent and embedded in the organisation, as well as management ability to drive change, and all this encompasses.

Drawing on theory, Checkland and Scholes (1990) recognise that roles, norms and values of individuals will generate different perspectives and abilities in an organisation, which can significantly support or obstruct adaptability and flexibility. Values relate to the level of commitment and sense of purpose in the organisation, levels of flexibility, autonomy, perspectives of others, and performance and reward (Checkland and Scholes, 1990).

Drawing on the field of knowledge management directly, De Goojier (2000) provides a model of knowledge management which incorporates a behaviour framework intended to identify the levels of practice demonstrated by individuals, which is based on change management theory. Knight and Howes (2003) refer to change management, arguing that the strategy for change is likely to be driven from the middle and bottom of the organisation. Neither framework is in the context of evaluating the organisation's readiness to engage with knowledge management, but at a general or implementation stage. This framework is specific to evaluating an organisation's readiness and is underpinned by theory, empirical work and through such reasoning as has been undertaken here, provides for a more robust argument for change management to be included. The theoretical underpinning is derived from soft systems and critical thinking, strengthened by Lehaney et al (1997) for example, who refer to soft systems as a relevant method that has strong linkages with change management.

Summary of justification for Critical Discursive Opportunities
(Sections 2.1, 2.2, 3.3, 4.4, 4.7, A3.6, A4.3, 5.4)

From a theoretical perspective, drawing on (Ulrich 2003), critical discursion is not about finding categorical and rational answers, but recognising variables and influences, and remaining positively critical of ideas and initiatives to be creative or to improve a situation. This means asking the right questions and setting the right scene for critical discursion, but before this can be achieved it may be important for senior managers to critically review themselves, their management style and understanding communication as a critical dialectic process. This distinguishes information exchange from knowledge sharing because the emphasis is on learning and exploring solutions by incorporating diverse perspectives and considering complex relationships.

Senior management's recognition of power and domination is important to understand in the context of knowledge sharing, for example, empirical evidence gathered in the University of Luton case study explicitly states that senior management have the ability to enhance or ruin career progress, therefore it is difficult to speak out. The default position of staff is such that knowledge sharing would be obstructed, therefore it is the

responsibility of senior management to facilitate and engender confidence, trust and understanding to encourage critical discursion. Methodologically, the ethos and use of Soft Systems Methodology provides a relevant approach to progress this. Gao et al (2002) draw on critical systems thinking to develop a toolbox for knowledge users, however there is inadequate discussion about how this might be applied in practice and the framework has not been tested. This Element of the framework is a key issue for all Domains, but as with commitment and leadership may be more successful if driven and led by senior management.

Summary of justification for Relationship Management/Handling

(Sections 1.1, 3.3, 3.4, 4.2, 4.5, 4.7, A3.2, A3.3, A3.4, A3.5, A3.6, A4.3, A4.4, 5.2, 5.3, 5.4. Appendix 1, Appendix 2)

Drawing on knowledge management literature, relationship management is regarded as important because knowledge is still regarded as a personal rather than an organisational commodity and associated with power, money and organisational effectiveness. The dynamics of relationship management include the tension experienced relative to power and politics, competitiveness and collaboration, control and laissez faire leadership, participation and facilitation of sharing and learning. Referring to organisational theories, relationship management can be considered at an individual level, group level and between different cultures and structures. Considering learning theory, the learning cycle in an organisational context leads to the need for an appropriate management style or approach which regards effective communication as high priority and control that is capable of relationship handling, engendering a culture of trust, honesty, empowerment and participation. This view is empirically underpinned by the University of Luton case study. Checkland (1993) explicitly recognises relationship management as important when considering change that requires shifting attitudes or perspectives and understanding. He points out the complexity of problems and the rich interconnections and relationships between sets of parts. In the knowledge organisation such parts are predominantly made up of people. Bhatt (2002) highlights the relationship between individual and organisational knowledge and the independent and interdependent process from one to the other. Merali (2002) refers to the relationship between cognitive

action and social aspects of the knowledge management process in an organisational setting. Balasubramanian et al (1999) points to relationship management with other organisations and HR in the context of capability. Relationship handling appears to be relevant to all aspects of the framework, and the theoretical and empirical underpinning is explicitly demonstrated.

Summary of justification for Communication

(Sections: 1.1, 3.3,4.3, 4.4, 4.5, 4.7, A3.1, A3.2, A3.3, A3.4, A3.5, A4.3, A4.4, 5.1, 5.2, 5.4, 5.5 Appendix 1, Appendix 2)

Communication is a key factor in knowledge management, crossing all aspects of the organisation, and as with relationship handling, is relevant to all aspects of the framework. The rationale for entering communication here is as a result of empirical work, which identifies communication as being an issue in relation to senior management in particular, and therefore as an element that emanates from senior management throughout the organisation, affecting learning and cross organisational working practices. This incorporates quantity, quality, formal, informal, expectations management, and attitudes, tone, use of language, targeting specific audiences, categorising, contextualising all within the scope of communication. The literature review discusses the continuum of communication from hard based to soft. The HEFCE recognise that in higher education, investment in communication and associated technology is necessary to improve the quality and flexibility in Higher Education thus improving competitiveness. Drawing on theory of communication, Watzlawick (1968) delves into what communication means and the importance of conveying information which incorporates behaviour as well. Fineman and Gabriel (1996) explore story telling as an important emerging informal communications channel. Empirical research identifies that informal communication can facilitate peer and social support and opportunities to discuss issues of concern that may arise, which is an important element influencing organisational attitude. Ulrich (2003) discusses communication from a critical perspective pointing out that it is not just electronic information exchange, but a dialectic and critical discursive process that is important.

Communication and transparency are synergistic elements in an organisation and relate to the knowledge that is actually shared, and senior management's awareness of knowledge in the organisation. The challenge for managers is how make knowledge and processes comfortably explicit and transparent without risking the organisation. Drawing on the theory of organisational structure and culture, strong horizontal and vertical co-ordination and communication may be necessary to both engender transparent processes whilst managing the risk.

Referring to theory of organisational structure and culture, different issues in relation to communication and structure are considered, and the extent to which an organisation can be easily facilitated, centrally controlled or devolved. Drawing On Checkland's (1993) Soft Systems Methodology, as with knowledge management, communication is a key aspect that is core to systems thinking, therefore providing a sound methodology for the development and implementation of a framework.

Domain 2

STRATEGY

Summary of justification for Conversion of knowledge into measurable targets
(Sections: 1.1, 4.2, 4.5, 4.6, 4.7, A3.3, A3.6, A4.3, A4.4, 5.2)

As with any business initiative, the conversion of knowledge into measurable targets is crucial, because without the understanding and ability to measure, progress is unlikely to be successful. This is directly connected to purpose, and the definition of knowledge management for the organisation, to engender understanding about what is actually be measured, from which the elements of each Domain can have targets established that can be measured. The methodology to underpin the measurement of targets can be derived from Soft Systems Methodology, as Checkland (1993) explicitly recognises transformation to be the conversion of inputs to outputs and how new systems, procedures, culture or service change the situation. It is important to establish what measurable targets can be implemented to monitor transformation as this can vary according to different perspectives and therefore be virtually limitless.

Drawing on management theory, Thompson and Strickland (1996) define strategic management as consisting of five interrelated managerial tasks which include converting the strategic vision and mission into measurable objectives and performance targets. Empirical research identifies the want and need for converting strategy into measurable objectives and that whilst this does occur, feedback and recognition of achievements remains weak and problematic.

Summary of justification for Evaluate, Review, Improve
(Sections: 4.3, A3.4, A3.6, A4.1, A4.3, 5.4)

Drawing on management theory, the process of evaluating, reviewing and improving are important to sustain progress (Thompson and Strickland 1996), but the approach taken should be considered if knowledge management is to be maintained. Davenport and Prusak (1998) propose the evaluation of performance and provision of incentives based on sharing, with status and rewards going to knowledge sharing champions who strive to achieve positive outcomes. Lee and Kim (2001) suggest that the effectiveness of knowledge should be evaluated, the environment should be monitored and best practice shared to improve core knowledge areas and activities. Checkland's (1986) Soft Systems Methodology provides an appropriate methodology to undertake the process of evaluation, review and monitoring in the overall approach to evaluation of an organisations readiness, and for subsequent implementation of the framework. Empirical evidence suggests that evaluating, reviewing and improving including the required feedback are areas that should be considered in a framework.

Domain 3

EXTERNAL ENVIRONMENT

Summary of justification for external environment including knowledge initiatives with - community groups, customers, other stakeholders. -Global issues- language dominant cultures. Diversification-consultancy & research & development.)

(Sections: 1.1, 3.1, 3.2, 3.3, 3.4, 4.2, 4.3, 4.5, 4.6, 4.7, A3.2, A3.3, A3.4, A3.6, A4.3, 5.3, 5.2)

The importance of external knowledge management initiatives have been recognised and reasoned throughout knowledge management literature, for example Allee (1998) includes external stakeholders such as customers, strategic partners, suppliers, investors and communities as external intellectual capital. Davenport and Prusak (1998) propose that external relationships can provide competitive-intelligence. In addition, the inclusion of external knowledge initiatives can be theoretically underpinned through theories of strategic management, for example Lawrence and Lorsch (1967), Truch (2001), Ansoff (1996), Clarke and Clegg (1998). Clarke-Hill and Glaister (1995) discuss structural development as an organisation grows, leading to vertical integration, and research and product diversification. A key aspect of knowledge management is this external interface and a knowledge management strategy and culture could facilitate a more controlled and united diversification of the organisation by ensuring open lines of communication, sharing and innovation thus reducing the risk of divisions, duplication and loss of creativity. The literature review highlights the pressure on Higher Education institutions to become increasingly self funding through research and external knowledge transfer.

Empirical underpinning has been derived from the University of Luton case study which confirms that irrespective of how the student or external business relationships are viewed, the shared knowledge and interaction between staff, staff and students, and staff and external business and stakeholders impacts on the extent to which an efficient and co-ordinated service and provision may be delivered. HEFCE strategic objectives and organisational aims, highlight the pressure Higher Education institutions are under to engage with external knowledge management initiatives. HEFCE objectives include the development and maintenance of effective partnerships with institutions, employers, other funding and professional bodies, and others with a stake in higher education, by providing clear and open information and promoting collaboration between them.

Research into frameworks currently available reveals various approaches to the external environment. Abou-Zeid (2002) refers to the external cognitive domain which includes

customers, suppliers, partners and competitors, and the need for the knowledge enabling process to address cultural issues. Lee and Kim (2001) discuss networking, which they define as an external integration stage where organisational knowledge is networked with suppliers, customers, research firms and universities. Hatten and Rosenthal (2001) consider external contracting and partnerships and the acquisition of new skills and abilities achieved through partnership. None of these frameworks consider the readiness of an organisation to engage with external knowledge initiatives, nor are they theoretically underpinned. When considering the external environment it has become increasingly important for competitiveness to consider the global environment and an organisation's ability to create, share and utilise knowledge on a global scale. In the modern service industry the increase in virtual working and advancement of technology means that more organisations are engaged in high technology activities in a global environment.

A relevant theory and methodology that underpins this element is drawn again from Checkland (1993). Checkland discusses designed systems which can be physical or abstract, their current condition and relationship with external elements which affect a system and the condition of those external elements.

Domain 3

INTERNAL ENVIRONMENT

Summary of justification for Internal Environment

Sections: 1.1, 3.1, 3.4, 4.2, 4.4, 4.5, 4.7, A3.3, A3.4, A3.6, A4.3, 5.2, 5.3

The internal environment in this case refers to the physical opportunity for formal and informal interaction to support explicit and tacit knowledge sharing. It has been separated from culture; business processes etc, because these aspects are dealt with in other Domains within the framework. The emphasis here is placed on physical facilitation opportunities to engage in a social and creative way, through both formal and informal communication. Empirical research from the University of Luton case study identifies concerns about opportunities for staff to engage informally in communal areas, for example provision of cyber cafés and social space which can engender greater creativity and tacit knowledge sharing than formal meetings. This facility was

subsequently introduced. This is an aspect of knowledge management that should be explored further and evaluated in the context of readiness to engage with knowledge management.

Tacit knowledge is the experience and wisdom developed as a result of using and applying hard information, whilst absorbing the internal and external environment and culture of the organisation and its industry. Tobin (1996) discusses the knowledge network in relation to transformational learning, focussing on various approaches which provide the organisation with information about internal and external knowledge bases, individual and group learning facilitation. But this type of learning about the internal environment is still formal, whereas the informal is that area which is difficult to translate explicitly but adds high value to the intellectual base of the organisation and contributes to increasing capability. Further, it would be remiss to think that all knowledge sharing can be achieved through formal processes and activities because individuals still regard their knowledge as power and security, and to explicitly give it up to others would weaken their position, but with the right internal environment, where knowledge owners are provided with the opportunity to choose who they share or collaborate with may still achieve greater advantage for the organisation.

With regard to the internal technological Domain, until recently, more emphasis has been placed on IT systems as providing all the answers to implement knowledge management, with less regard for the human side of knowledge management. Hughes et al (2000) demonstrate that even if the emphasis is on technology and virtual working, issues around communication, managerial problems in relation to monitoring and control of the workforce and tension between different virtual teams still emerge.

Putting technology in its rightful place means recognising the activities that will facilitate knowledge management, for example Balasubramanian et al (1999) identify primary activities including capturing, transforming, classifying, maintaining, discovering and disseminating information, which should be linked to strategic planning. Apart from selecting the appropriate software for undertaking these activities,

Balasubramanian et al state that it is the interface between IT and people that will render chosen software effective or ineffective.

Domain 4

PEOPLE

Summary of justification for Training and Development

(Sections 3.2, 3.3, 4.1, 4.2, 4.6, 4.7, A3.2, A3.3, A3.4, A4.3, 5.4. Appendix 1, Appendix 2).

Higher Education literature highlights that as with management development, HEFCE provide funding in support of Rewarding and Developing staff (Dec 00/56) in recognition of the changing roles and combinations of functions in the Higher Education sector. Empirical research clearly indicates that time to attend training is problematic. However, the workforce perception of what constitutes training and development could be too limiting in that it appears to focus very specifically on central provision of training and development rather than the broader opportunities that staff engage with such as distribution of information networks, discussion during meetings, attendance at professional conferences, peer review, mentoring etc... Inherently and unlike private sector organisations, training in the Higher Education sector is a voluntary matter. This may result in one of two scenarios; first either staff will feel motivated enough to receive and engage with learning through a rich variety of formal and informal activities, or they will continue in unconscious ineffectiveness. The assessment of an organisation's overall training and development activities will reveal the current state of this element, highlight good practice and effectiveness of activities and distinguish that which perhaps should be compulsory to improve overall performance and competitive stance.

Theoretical underpinning for this element of the framework has been derived from organisational learning theory, for example Senge (1992), Bennis and Nanus (1985), Davis and Davis (1998), who discuss individual learning and the organisational impact. Senge in particular considers the systematic approach and impact across the organisation, and as such, is complementary to the systems approach proposed for the framework.

Knowledge management literature generally recognises the importance of learning, training and development. In relation to Intellectual capital and intangible investments, Liikanen (1999) highlights the urgency to invest more in intangibles which include training, research and development. Organisational and management theory also highlights the importance of training and development, but when reviewing knowledge management frameworks, few explicitly address this. Binny (2001) refers to training and the development of tacit knowledge through communities of interest and engendering a learning culture. Snowden (1994) recommends training audits, and Knight and Howes (2003) propose and provide analytical tools for training. In each case there is no indication of theoretical underpinning to support approaches. This element of the framework does draw on theory, and empirical work.

Summary of justification for Expertise Mapping (who knows what)
(Sections 1.1, 3.3, 4.3, A4.3).

Literature suggests that it is particularly important to understand cross-organisational working opportunities and as such the mapping of expertise is necessary to expose such opportunities. Hylton (2002) refers to categorising knowledge workers, where they are located in the organisation, what job they do and what professional and academic qualifications they have achieved. Snowden (1994) identifies four key elements as the process within which knowledge management is progressed, which includes knowledge mapping. Snowden defines knowledge mapping as a process of discovery through the use of judgements and decisions and includes participation, communication, team formation, and creation.

Empirical evidence gathered through the University of Luton case study indicates that there are issues relating to confrontational behaviour by older academic staff particularly toward their younger counterparts, which obstruct good practice for cross organisational interaction, succession planning and organisational memory and may obstruct expertise or knowledge mapping. A clear and agreed approach to knowledge mapping would

assist in resolving such issues by identifying alternative avenues to access new knowledge and perhaps assisting in changing the culture for sharing to become more acceptable.

Summary of justification for Matrix team activities

(Sections 3.3, A3.4, A3.6, A4.3, 5.2. Appendix 1)

Empirical evidence gathered in the University of Luton case study suggests that there are good examples of matrix team activities such as Teaching Quality Assessments, where matrix team working in the organisation improves levels of communication and interaction, with both explicit and implicit knowledge sharing, and the corresponding empowerment, authority and control to achieve positive outcomes.

According to organisational theory, a matrix team can encompass a wide variety of project oriented business activities, effective training and broad exposure to strategic management. It maximises efficient use of functional management, fosters creativity and sources of diversity. From a knowledge management perspective; the matrix team may be the most effective in providing the type of culture that facilitates creativity, sharing and transfer of learning and knowledge. Matrix teams do not reflect a true embedding of the concept of knowledge management in the organisation, but can provide an incremental progression toward cross organisational working and change to become more engaged with knowledge management.

Summary of justification for Feedback mechanisms

(Sections 1.1, 3.3, 3.4, 4.3. Appendix 1)

Empirical evidence gathered in the University of Luton case study revealed that there is little recognition for the work produced and poor feedback on performance and praise for good work; The majority of staff are dissatisfied with the level of feedback on performance and praise for good work. However, most feel that they have accomplished something worthwhile at work. This includes formal and informal feedback mechanisms.

Learning theory advocates the need for feedback in relation to positive performance management, development, motivation and so on. As such, an appropriate knowledge management strategy should recognise the value of staff, especially in an organisation such as a university where experts specialise in knowledge based work, and the concept of development through learning and sharing should be based on reciprocal respect, confidence, feedback and trust in individuals' contribution to the overall organisation.

Only one knowledge management framework reviewed identified feedback to be of significant relevance, i.e. Arora (2002) recognises feedback as one of the key aspects of communication in knowledge management.

Summary of justification for Roles

(Sections 3.2, 3.3, 4.3, 4.7, A4.3, A4.4, 5.1, 5.2)

Empirical evidence gathered from the University of Luton case study highlights that roles of staff are likely to change, as they undertake different combinations of functions at different stages of their careers and as such values and norms may also change. Newly learned knowledge is translated into new goals, procedures, roles and performance measures (Bennis and Nanus 1985).

Drawing on knowledge management literature, Connell et al (2001) distinguish between different participants in different roles within a system, for example, those who are experts to be consulted and those who require knowledge. Pérez Pérez et al (2002) refer to knowledge management activities as the activities undertaken in order to achieve the requirements of specific roles in the context of knowledge roles and in relation to the feasibility of these roles for teleworking. Zack (1999) recognises that knowledge management roles relate to cross-organisational processes.

From a theoretical perspective, Checkland (1993) highlights that due to the nature of human beings different accounts of what may seem to be the same situation will emerge

and such accounts can add to or detract from improvement in situations depending on previous experiences, understanding and overall knowledge. This provides richer information about the organisation, the participants, roles, norms and values. In this sense, employees should know of their individual involvement and context in a knowledge management system, and as with any organisation will define the mission or purpose, contextualising it according to their roles. For example, roles relate to social positions that are recognised by individuals in a given situation and roles are defined either by position or behaviour. Positions can change and subsequently roles in the situation can change, therefore the contribution to knowledge may differ.

Summary of justification for Critical Discursive Opportunities

(Sections 2.1, 2.2, 3.3, 4.4, 4.7, A3.6, A4.3, 5.4)

Repeating what was stated in the management element, from a theoretical perspective, drawing on Ulrich 2003, critical discursion is not about finding categorical and rational answers, but recognising variables and influences, and remaining positively critical of ideas and initiatives to be creative or to improve a situation. Whilst for management this involves asking the right questions and setting the right scene for critical discursion, the extent to which the broader workforce wish to be engaged in such a way or have been engaged can depend on many variables such as motivation, confidence, trust, time, interest and so on. This Element is important because the evaluation of an organisations readiness in this context may differ from management's perspective and the broader workforce's perspective, for example, referring to empirical evidence gathered in the University of Luton case study there was a view that senior management have the ability to enhance or ruin career progress, therefore it is difficult to speak out. The default starting position of staff is negative and demonstrates that true knowledge sharing would be obstructed.

Summary of justification for Incentives

(Sections 3.2, 3.4 ,A3.4, A3.6)

Drawing on literature, when considering the key issues that the HEFCE raises, several areas emerge that should be considered within a strategic framework that would contribute to the readiness of higher education institutions to engage with knowledge

management including reward and recognition of employees and incentives to encourage knowledge sharing. This is demonstrated through a HEFCE funding initiative "Rewarding and Developing Staff (Dec 00/56)

From an organisational theory view, Handy (1993) highlights the position of power, expertise and knowledge, which, when considering knowledge management raises the challenge of an appropriate structure and incentives or other motivational activity to share knowledge to the benefit of the business rather than to serve personal interest.

Empirical evidence gathered through the University of Luton case study suggests that there are no real personal incentives in place that would encourage knowledge sharing.

Reflecting on the frameworks reviewed Arora (2002) comments on the need for incentives within the context of the application of the Balanced Score Card to knowledge management. Lee and Kim (2001) introduce the concept of incentives at a propagation stage of introducing a knowledge management process.

Summary of justification for Job Rotation/ Communities of Practice (Sections A3.6, A4.3)

Drawing on organisational learning theory, job rotation and communities of practice can create common ground through education, discussion, publications and teaming (Davenport and Prusak 1998). Arora (2002) discusses knowledge innovation in the context of communities of practice, and in relation to skill enhancement, suggesting that some activities such as job rotation, and communication improves competence. Duru Ahanotu (1998) highlights the importance of cross-organisational working and communities of practice to ensure that diverse viewpoints are taken into consideration. Snowden (1994) stresses the importance of communities of practice and the extent to which an organisation engages in initiatives such as this to share, create, and improve knowledge and learning.

Empirical evidence gathered through the University of Luton case study highlights that there is a lack of cross organizational working and communities of practice and the culture would need to change to accommodate this.

Domain 5

PROCESSES

Summary of justification for Central Control versus Devolved Process
(Sections 3.2, 3.3, 4.4, A3.2, A3.4, A3.5, A3.6, A4.3)

Empirical research conducted in the University of Luton case study shows that with a developing and changing environment, central control can be advantageous to drive change through specific areas such as staff development, which can support and sustain the culture shift, and the management of communications and information. It is questionable, however, as to whether tight central control leads to embedness in the organisation and whilst certain activities may benefit, others could suffer as a result. For example proposals for information management in the University of Luton recommended a central policy that set document life “kill by” dates, rules for publishing to the intranet, parameters for design structure, functionality and “house style” and guidance provided on acceptable use. In addition, the University of Luton recognised the need for a strong professional central administrative core to facilitate smarter working systems essential to establish business processes capable of supporting strategic repositioning in a competitive environment. Staff development and training, however, was split between corporate and academic and the view was held that locally driven development would be more effective. The disadvantage is likely to be reduced cross fertilisation of ideas and a ‘silo’ mentality.

Drawing on organisational theory and management theory, centrally controlled and standardised systems reflect the concept of Scientific Management which has advantages in relation to knowledge management, as long as it is tempered with a rational and controlled management approach that is participative. The desire for central control in functional structures tends to reflect a management approach that is based on central knowledge, power and control. The disadvantages include rivalry and conflict between

functional areas, with obstructions to the sharing of information, co-ordination and inter-functional decision making, and limitations in management development. The challenge therefore relates to centralised control of certain activities balanced with an appropriate management attitude and capability that engenders participation and supports knowledge management.

Gibson, Ivancevich & Donnelly (2000) highlight that different types of structure determine the extent of formalism, complexity and centralisation. Handy (1993) proposes that appropriate structure is determined by a variety of forces such as technology, market size and people and the primary choice is between uniformity or centralisation/standardisation, and diversity/decentralisation. Advances in technology, increasing instability and competitiveness, is to some extent diminishing the traditional form of central control, for example the virtual organisation, model or system, however, some form of central control or leadership is necessary to ensure the objectives of the business are achieved and from this perspective, the overall management and control issues remain constant, i.e. functional, hierarchical and bureaucratic. This brings the discussion back to the conclusion that there are tensions between the need for centralisation and standardisation and the culture that is inherent within the structure to facilitate this, in addition to the need for a more human relations approach to management of the organisation to engender knowledge creation, sharing and utilisation.

In reviewing current knowledge management frameworks, there is only one reference to this issue from Bolloju, Khalifa, Turban (2002). They introduce a framework based on decentralised decision making and the requirements of decision-makers to combine different types of data and knowledge (both tacit and explicit) available in organisations.

Summary of justification for Virtual Business Processes

(Sections: 1.1, 3.1, 4.4, 4.7, A3.2, A3.4, A3.5, A3.6, A4.3).

Literature points out that the higher education sector is not restricted to the notion of a fixed and rigid organisation in permanent or semi permanent environments, but as with many modern organisations, embraces the notion of transition and virtual working with

fluid, ever-changing knowledge communities, that increasingly operate in project teams as the situation requires. The higher education sector is striving toward E learning and virtual working environments, which require collaborative project working and cross-functional teams.

Drawing on organisational theory, various human resource issues are of concern in the increasing shift to the virtual organisation with greater use of technology to underpin this. These organisational and management changes erode membership of specific groups and affect levels of communication, continuity and knowledge sharing as oppose to information sharing and potential information overload.

Focussing very specifically on technology and considering virtual working, Thomas (1999) highlights some of the challenges for management such as the erosion of teamwork, affiliation to the organisation, increasing social problems, loneliness, lack of communication and erosion of the corporate culture and higher job turnover, all of which impact on knowledge management.

Considering organisational structure, Walter (2000) suggests that virtual organisations are a logical continuation of the development of the industrial organisation, with important consistent management characteristics- knowledge management, technology management and relationship management to achieve market competitiveness. Hedberg (1981, in Despres & Chauvel 2000, p269) describes virtual organisations as “metasystems that tie various partner companies and individual actors together in order to share resources, pool competencies, and gain flexibility to produce good value for and with customers”. This is undertaken through the use of the Internet as a tool in conducting business, which tends to be specific to projects. Hughes et al (2000) point out that from a management perspective, in the virtual organisation, workers will show more allegiance to the product (or subject) or team they are involved with than the organisation. Again representing an added challenge and complexity when considering knowledge management in a modern organisation.

Summary of justification for Quality Assurance Processes and Value for Money

(Sections: 1.1, 3.2, 3.3, 4.7, A3.6, A4.1, A4.3. Appendix 2)

knowledge management is about action which improves the quality of decision making and brings with it concerns about planning, performance review, productive capacity, social and commercial contribution, value for money and quality. Greater pressures are being placed on the workforce in Higher Education, to improve quality, accountability (HEFCE August 00/36), and performance (HEFCE February 99/11), to maintain standards of quality, improve performance, and ensure appropriate lines of accountability, responsibility and responsiveness.

Empirical evidence gathered through the University of Luton case study demonstrates that there are good examples of working practice in Higher Education that compliment knowledge management approaches, such as Teaching Quality Assessments where matrix team working in the organisation improves levels of communication and interaction, with both explicit and implicit knowledge sharing, and the corresponding empowerment, authority and control to achieve positive outcomes. This research also highlights that an organisation that functions only on people and knowledge should encourage a non-hierarchical approach to knowledge to improve the quality of ideas because this is more important than the status of source and requires an integrated human resource *and* knowledge management strategy.

Exploring current knowledge management frameworks, Achterbergh and Vriens (2002) recognise the need for co-ordination and quality standards meetings to monitor performance. Kwang et al (1999) apply a quality strategy to knowledge management, which is then connected with a cost model to produce a knowledge management framework, auditing procedures, and reviewing procedure for new proposals to assess the potential for change.

Summary of justification for Policies/Procedures

(Sections: 1.2, 3.3, 4.3, 4.6, A4.3. Appendix 2)

Empirical evidence suggests that organisational change, if not managed well can result in inconsistencies in policies and procedures, which contribute to negativity and

demotivation, impacting on culture and negatively affecting the concept of knowledge management. The outcome of focus groups confirms the need for central policy and procedures for guidance and control, which includes policy and procedures to ensure document life “kill by” dates, rules for publishing, data inputting, and guidance on acceptable use. Such guidance and control assists in providing the boundaries within which the workforce operate.

Achterbergh and Vriens (2002) suggest that policy and procedures relate intelligence to control ensuring that the organisation defines its identity in such a way that fits developments in its environment. This points to the need to consider the link between the hard and soft aspects of knowledge management to policy and strategy to provide a deeper understanding of knowledge management that filters down to operational levels when considering a controlled approach to policy and procedure.

Summary of justification for Intellectual Capital /Performance Measurement

(Sections: 1.1, 1.2, 2.4, 3.2, 3.3, 3.4, 4.3, 4.5, 4.6, 4.7, A3.1, A3.2, A3.3, A3.4, A3.5, A3.6, A4.3, A4.4, 5.2, 5.3. Appendix 1, Appendix 2).

Drawing on literature, Snowden (1994) states that intellectual capital systems is one of the most common knowledge management projects, which are generally IT based, and should be developed through effective knowledge mapping and creation of communities of competence to ensure effective use of IT. Intellectual capital includes organisational and individually accumulated knowledge, ability, skill and expertise. Individuals however do not necessarily possess the skills that incorporate everything (Quinn, Anderson and Finkelstein, 2000). Managers and organisations, therefore, need to understand the value and contribution of intellectual assets and increase their worth, effectiveness and exploitation. Individual knowledge, organisational memory, and intellectual content can be improved through teamwork and learning (KPMG, 1999. Smith and Irving, 1997).

Intellectual capital needs indicators to measure the performance of a company which may include accounting, investment, and disclosure of information and should be tackled

in an inter-disciplinary way based on research and development, innovation, training and marketing (Liikanen 1999). Intellectual capital, however, is difficult to measure. Whereas physical assets are stable and consistent and can be accurately valued and depreciated, intellectual capital can not be accurately valued and can appreciate as well as depreciate, therefore physical assets provide a less complex system of valuation.

Clearly finance and accountancy procedures will assist in establishing whether knowledge management is likely to thrive or not. This incorporates issues such as internal competition for resources, performance measurement, models that will underpin and make transparent the benefits of knowledge management. Knowledge management should produce outputs which include financially tangible or intangible advantages such as increased ability to compete, profit generation, greater organisational effectiveness, improved quality. Traditional accountancy procedures differentiate between tangible and intangible assets, and intellectual capital represents all the assets of a company not represented on a balance sheet. Allee (1998) describes intellectual capital as including: people with their knowledge, skills, experience and problem solving abilities; processes, such as systems, communication technologies, databases, documents, patents, copyrights and other codified knowledge; and the customer which represents external capital and includes strategic partners, suppliers, investors and communities.

Exploring underpinning theory in this element, Arora (2002) uses the Balanced Score Card to align management processes, introduce performance measurements and focus an organisation to implement knowledge management. This includes measurement of intellectual capital, recognition and reward. Binny (2001) introduces asset management, which involves explicit knowledge assets and processes relating to identification, exploitation and protection of intellectual property. Snowden (1994) introduces a framework intended to provide a context for the practices of knowledge management and a perspective for the role of intellectual capital assets within an organisation.

Changes in the higher education sector have placed greater emphasis on performance

review, productive capacity, social and commercial contribution, value for money and quality. Greater pressures are being placed on the workforce, to improve performance (HEFCE February 99/11), and empirical evidence suggests that there has been little recognition for the work produced and poor feedback on performance and praise for good work in practice. If the success of knowledge management is to be judged usefully, it must be linked to performance measurement of the business areas on which it impinges and to achieve this participatory approaches to the development and implementation of performance and knowledge management systems are advocated.

Bennis and Nanus (1985) propose that newly learned knowledge should be translated into new goals, procedures, roles and performance measures and in this sense the concept of the learning organisation can provide individual and collective contribution to improve performance, engendering the trust and interdependency among teams to achieve higher outputs.

Herzberg (1959 in Mullins 1996) discusses motivation, stating that if motivating factors are present, they will result in high performance. Motivating factors include job security, quality of supervision and management, and interpersonal relationships.

Managers tend to be judged on the performance of their staff, therefore, an organisation will be judged by the collective actions, abilities and knowledge of the entire workforce. Strategically therefore training, development, personal mastery and subsequent performance are essential elements within the human resource strategy. Cross-organisational interaction, knowledge sharing and learning may improve administrative problems and performance before they fall into decline, because this is likely to improve the ability to anticipate potential problems rather than react to them.

Davenport and Prusak (1998) comment on the importance of linking knowledge to business strategy stating that although in practice this link is rarely made, most knowledge management projects do actually improve the efficiency or effectiveness of individual departments or business processes. The more diverse the organisation,

however, the more complex the performance measurement will be and for success will require encouragement and support through appropriate rewards and recognition. Davenport and Prusak (1998) identify Knowledge Transfer Inhibitors and Potential Solutions and propose that performance is evaluated based on knowledge sharing, with incentives such as status and rewards going to knowledge owners.

Arora R (2002) uses the Balanced Score Card to align management processes and introduces performance measurements, asserting that this provides a performance measurement system, structured in a way that may lead to a least resistant path and places the main emphasis on people. The Balanced Score Card may provide an effective tool to progress an organisation to shift the emphasis from accountancy based on tangible easily measurable items, to more intangible and value driven performance measures. Pervaiz et al (1999) discuss measurement, including definitions of measurement, development of measurement, performance measurement and measurement systems. De Gooijer (2000) introduces a model of knowledge management for measuring the performance of knowledge management strategies for a public sector agency. Within the model, there are two frameworks, the first is intended to measure knowledge management performance and is based on a balanced scorecard approach. The second is a behaviour framework intended to identify the levels of practice demonstrated by individuals and is based on change management.

Drawing on theory, Checkland and Scholes (1990) present a logical approach that could be used for performance measurement based on an analysis of input to output, (do X by Y in order to achieve Z). Efficiency, effectiveness and efficacy can be measured according to the amount of output in relation to the amount of resources used to achieve an optimum process within the scope of a situation.

Domain 5

COMMUNICATION ACTIVITIES

Summary of justification for Communication Activities
(Sections: 3.2, 3.3, 4.4, 4.5, A3.4, A4.3).

Empirical evidence demonstrates the importance of communication activities within the organisation to encourage honesty, trust, respect, empowerment, consultation, teamwork and equal opportunities, all supportive of the knowledge management ethos, and on a practical level, reasonable access to the Intranet from networked desktop computing resources. Different communication activities assist in the conversion of tacit to explicit knowledge, complementing and implicitly contributing to the organisation.

Peters and Waterman (1988) recognise that there is an immense network of informal communication and open access to managers, a “virtual technology of keeping in touch”. Tobin (1996) discusses the knowledge network in relation to transformational learning, focussing on artefacts such as inventories of knowledge assets, i.e. data bases which provide the organisation with information about internal and external knowledge bases, learning resources and tools database, individual and group learning facilitation.

Merali (2002) introduces ‘Relationship Scripts’, which refers to relationships between individuals, inter organisational knowledge networks, credibility and filtering of information. Snowden (1994) refers to network management, training audits and best practice exchange. Lee and Kim (2001) refer to networking as one of four key stages in knowledge management. The networking stage is an external integration stage where organisational knowledge is networked with suppliers, customers, research firms and universities. At this stage the focus of organisational efforts become more specialist based on core knowledge and other required knowledge is outsourced.

Examples of activities which support communicating and networking include:

Fairs

Talk rooms

Conference report sessions

Yellow pages

Mentoring

Organisational publications

Communities of Practice

Action Learning Sets

External networking with agencies, business, customers

Knowledge Bank

Table 6.4.2 summarises the justification for including the remaining Elements in the framework. The table identifies each Domain and Elements with a summary of justification reached through critical reflection, for their inclusion and where this has been derived from in the main thesis where further detail can be located.

The following, Figure 6.4.1 presents the revised framework version two highlighting the Domains. Figure 6.4.2 illustrates the Elements within Domains version two. The list of Elements may not be exhaustive, because an organisation may identify additional Elements that require consideration according to their specific circumstances.

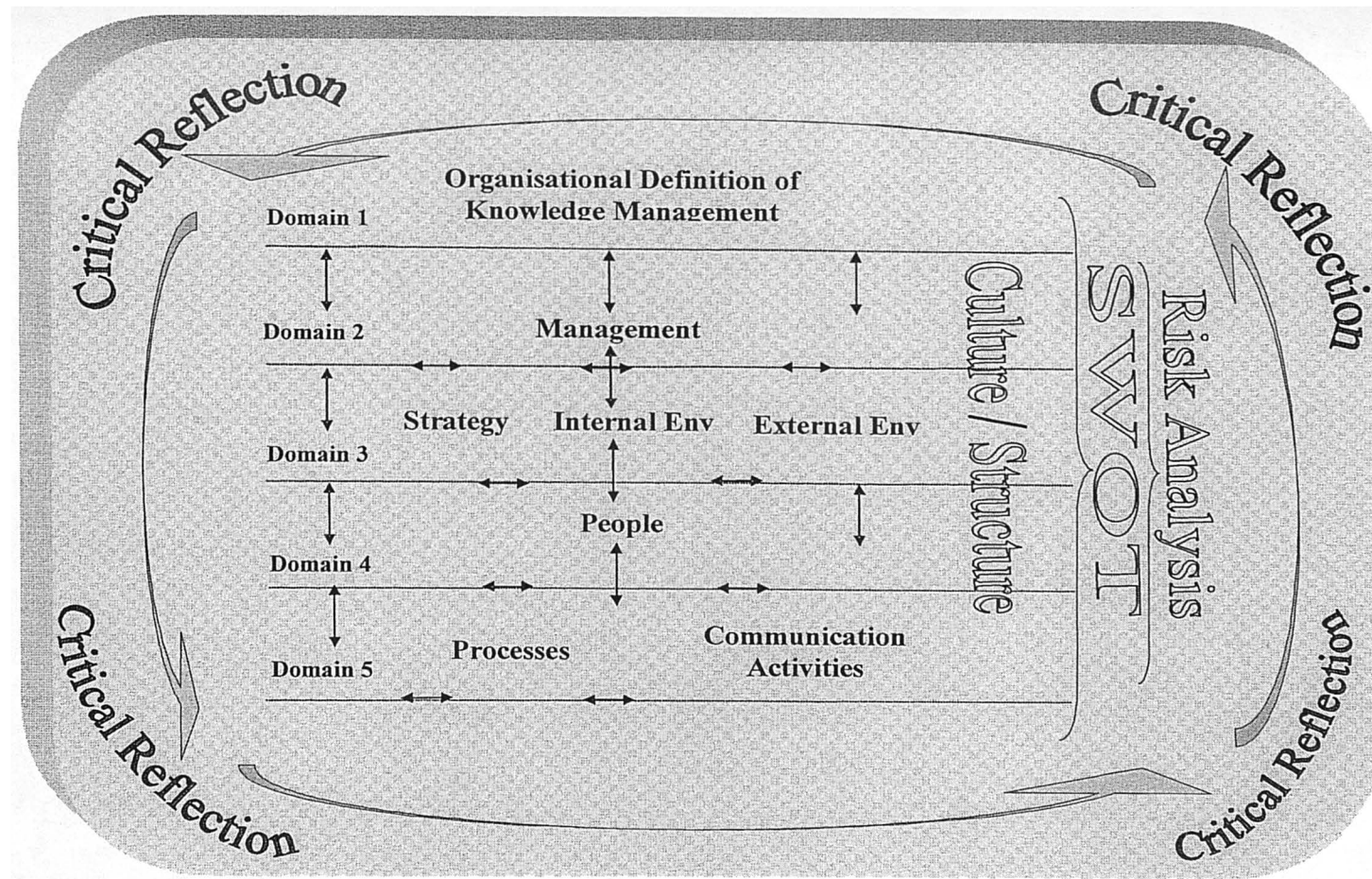


Figure 6.4.1: Revised Framework Version Two (Domains)

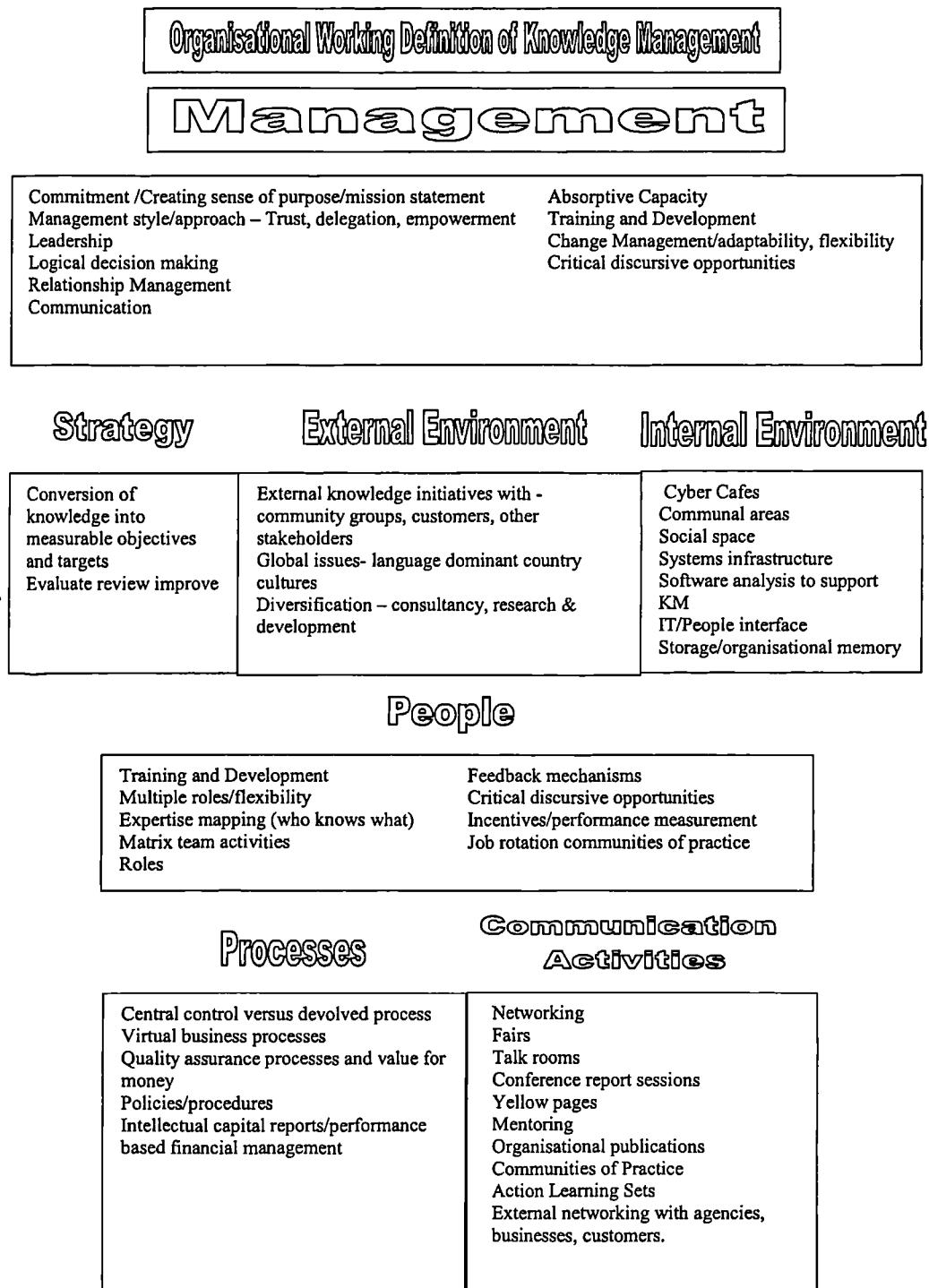


Figure 6.4.2: Revised Elements within Domains, Version Two

The initial approach to evaluation is introduced in table 6.3.1, based on Skyrme and Amidon's (1997) six questions of investigation. Following evaluation, the results of the assessment can be summarised by applying a SWOT and risk analysis as suggested from feedback received from the University of Lincoln focus group (appendix 7). To provide context, an overview of the framework is illustrated in figure 6.4.3:

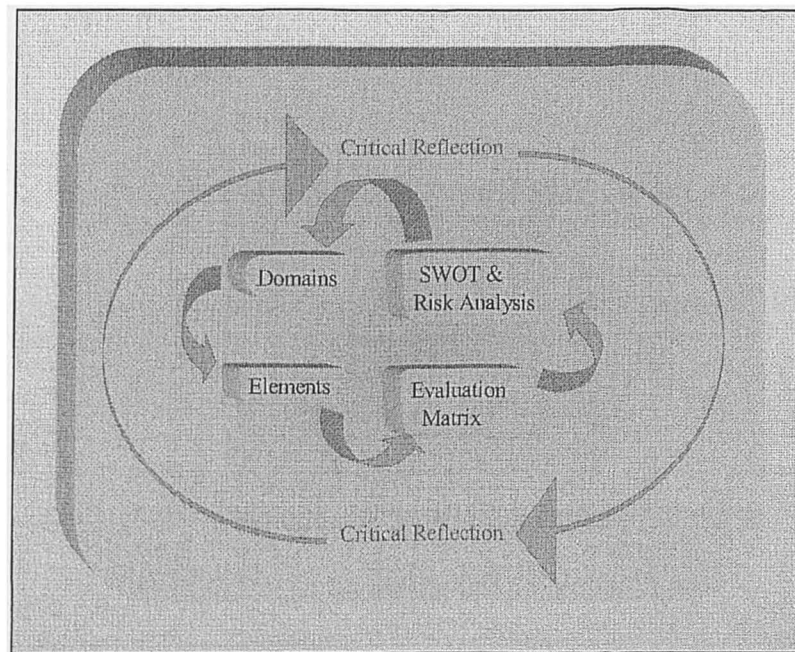


Figure 6.4.3: Overview of Framework

The overview of the framework identifies that the entire concept has been developed through a cycle of development, critical reflection and improvement, based broadly on Soft Systems Methodology, the latter has been accused of not being critical, but based on consensus and compromise rather than radical improvement or change (Jackson 2000). The critical reflection dimension was applied by the author in the development of the framework, and a knowledge based evaluation matrix introduced in 6.3.1. But the evaluation matrix is limited to the extent that it only guides the actual questions to be asked in the context of knowledge management, which does not necessarily evaluate the organisation's readiness from a robust critical perspective. Critical research therefore was drawn upon to explore its applicability.

Critical research assumes that social reality is historically constructed and produced and reproduced by people. Critical research advocates that although people can consciously act to change their social and economic circumstances they are constrained by various forms of social, cultural and political domination. Critical research exposes these conditions and seeks to be emancipatory. Drawing interpretive and critical research together, social constructions such as language, consciousness and shared meanings, and constraints such as political, social and cultural highlight the complexity of knowledge management, therefore critical research was useful to compare and contrast the ability to achieve an environment appropriate to knowledge management. It was recognised that this critical element would be important because it distinguishes this research from other work, in that it is not prescriptive, attempting to find categorical and rational answers. As Ulrich (2003, p325) states “what does it mean to be rational when the ... value judgements ... of parties concerned differ? Whose rationality is rational?” In this respect Ulrich proposes a discursive approach because truth, facts and consensus are ideal concepts, and “while rationally defensible consensus is bound to remain an ideal, inter-subjectively compelling forms of critique are achievable” (Ulrich 2003, p 326).

Further, a critical discursive process is what distinguishes information exchange from knowledge sharing because the emphasis shifts from non-action or simple problem solving to “learning and solution questioning” (Ulrich 2003, p 326). Ulrich continues by pointing out that the questions asked should not be pre-defined by the problem or those who may ask the question, implying the importance of open and cross-organisational interaction incorporating diverse perspectives and complex relationships. However, Ulrich argues that discourse is undertaken in power based structural situations referred to as coercive situations. In order to bring about change and improvement, creativity and innovation, it is necessary to “equalise the balance of power in the system and get rid of the structures of domination” (Ulrich 2003, p329). Ridding an organisation of structures of domination brings with it further difficulties and may render this situation unsustainable because such a move toward equality and emancipation is resisted by hierarchical situations and meaningful mutual understanding and equality of power will not be achieved.

Ulrich, therefore, recognises the need to provide opportunities for broad discourse situations based on critical awareness and reflection and introduces a multiple sphere model of discourse in society. Figure 6.4.4, a multiple sphere model of discourse in an organisation has been adapted from Ulrich (2003, p331) and applied to an organisational setting to illustrate. It also helps to illustrate how this research is distinctive in the development and potential implementation of a framework to evaluate an organisation's readiness to engage with knowledge management reflecting a crucial perspective relating to critical discussion and cross organisational participation, with the recognition of power bases and influences. This perspective has not been addressed in the knowledge management literature (chapter 4) or review of frameworks (chapter 5).

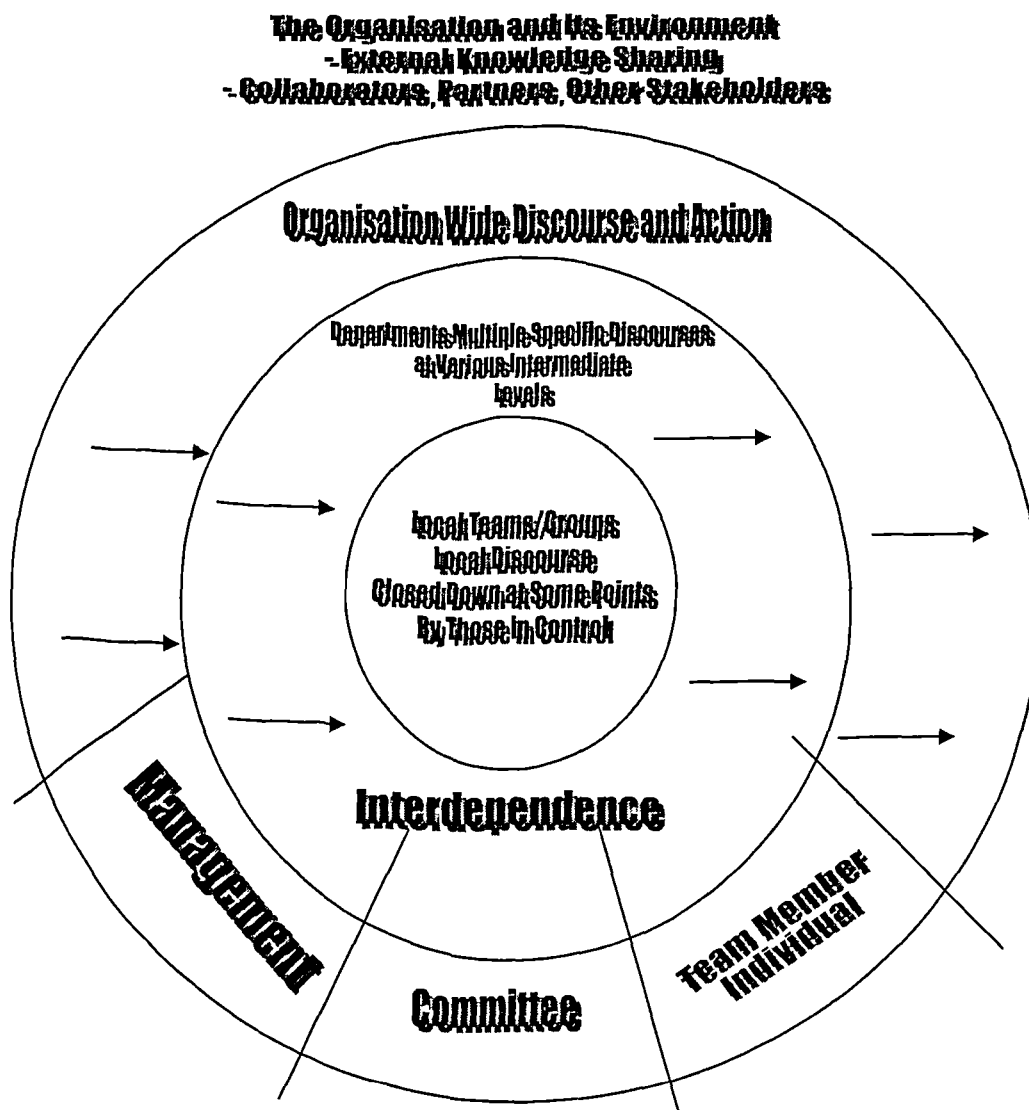


Figure 6.4.4: A Multiple Sphere Model of Discourse in an Organisation

Ulrich (2003) presents this model in the context of society at large and the politic administrative system. It has been adapted and used in this case because of the synergy with a university in the sense that it is a publicly funded organisation with a commercial slant. The model explicitly identifies different discourse situations which are presented in the context of intervention and evaluation in a university. This includes different levels of exposure that managers should be aware of to understand the environment that is to be

managed and their position in such an environment. Discourse runs from the centre of the model out with cross sections of influence and examples of domain specific influencers such as the manager, committee or team member/individual. Ulrich (2003, p331) highlights that “what happens at one level (output) may be the subject of discourse (input) at another level”. The relevance of this model relates to understanding the holistic approach to evaluation of a university’s readiness to engage with knowledge management and the relevance of taking a systemic approach.

To summarise, the foregoing identifies that whilst the framework for the evaluation of a university’s readiness to engage with knowledge management has been developed through a development, critique, improvement cycle, broadly based on Soft Systems Methodology, in terms of implementation and the actual evaluation, a critical approach is also necessary. An evaluation matrix was introduced in 6.3. But this is intended to guide the actual questions to be asked in the context of knowledge management, which does not necessarily evaluate the organisation’s readiness from this critical perspective.

The critical dimension is important because it distinguishes this research from other work, in that it is not prescriptive, attempting to find categorical and rational answers. Drawing on Ulrich (2003) a discursive approach that exposes critique is more achievable than truth and facts and such an approach requires open and cross-organisational interaction incorporating diverse perspectives and complex relationships. Although it has been recognised here that a critical evaluation is necessary, discussion thus far does not yet identify how the evaluation matrix is to be applied, therefore this process is discussed in detail next in section 6.5.

6.5 A Process to Enable the Application of the Framework for Critical Self Evaluation of an Organisation

In keeping with the systems paradigm, the framework and process of evaluation is underpinned by Checkland's (1981) Soft Systems Methodology, and reflects a social planning approach in an organisational context. Drawing on Ulrich (2003) the evaluation technique should be designed for critical reflection allowing for those who would be undertaking an organisational evaluation to critically reflect during the process of evaluation and in essence the framework and approach proposed should provide a tool to guide this process. The primary purpose is to evaluate whether the organisation regards itself as ready to engage with knowledge management considered from the organisation's point of view and those upon whom knowledge management might impact.

In applying the process for critical reflection, again Ulrich (1994) has been drawn upon and applied to Skyrme and Amidon's (1997) six questions of investigation. The evaluation matrix is based on the need to be able to ask the right questions to identify what currently happens, and explore with the organisation what ought to happen to engage successfully with knowledge management, whilst bearing in mind the need for appropriate participation in recognition the multiple sphere of discourse.

Ulrich (1994) points to specific issues to be considered which are discussed and applied to this framework and process of evaluation:

The first issue is purposefulness, which in this case is the formal design of the overall framework and assessment criteria used for intervention, based on Skyrme and Amidon's six questions of investigation. Ulrich (1983, p335) explicitly states that in applying a criterion "requires for each assessment question both an "is" and an "ought" question". However, just be using an "ought to" happen question may result in individual responses that are influenced by history and personal social conditioning, for example, if an individual has a mindset that indicates this is the way things have always been done, or what they personally think ought to happen, then the ought to happen scenario is likely to

be constrained by the individual focussing on their own agenda. But if the question is what is important to the organisation, then the response is likely to become more holistic, i.e. about the organisation, and personal agendas may be easier to expose. In applying this criterion, therefore the distinction between what currently happens in the organisation reflects the “is” scenario and what is considered to be important to the organisation reflects the “ought” to happen. By guiding the organisation to question what happens will assist in the explicit recognition of current “knowledge management” practices that may already be operational in an informal and ad hoc way, as well as identifying possible obstructions or areas for improvement and development. This will be achieved by juxtaposing the difference between where the organisation is on to what they consider to be important. This approach is imperative because it is more likely to drive the organisation to identify the issues and it forces active choice via empowerment of critical self reflection. The organisation has the power to choose to either act or to exclude or defer the issues that are surfaced in a transparent way.

The second issue relates to people within the organisation. Ulrich (1983, p335) states that “only human individuals are self reflective and autonomous ... it is clear that purposeful systems are made up of groups of purposeful individuals who are united by the convergence or interdependence of some of their purposes, though their interests may otherwise conflict”. This brings into play the concept of Checkland’s (1993) social systems analysis and the need to consider roles, norms and values when undertaking a full analysis of the organisation, in addition to the idea that different levels of staff have some level of interdependence, but different perspectives, therefore the importance of flexibility in applying the framework and process of evaluation should be maintained. It is anticipated that this framework has the ability to achieve this flexibility.

The third issue, as Ulrich (1994) points out is that social systems design is not a mechanistic design according to a functional criterion, and it is not a design *of* a social system, but a design *for* a social system which can be used in a critical sense. This framework and process of evaluation represents a design *for* an organisation which

requires a process of critical self reflection. Continuing with Ulrich there are three dimensions to an intervention such as this:

1. Inquiry. Does this framework and process of evaluation produce meaningful knowledge in respect of its purpose? The purpose of the framework is to evaluate the organisation's readiness to engage with the concept of knowledge management. The process of assessment identifies what is currently happening in this context and the level of importance placed on the specific Domain or element. Based on the results, therefore, it is anticipated that meaningful knowledge about the organisation will be gained in order for decisions to be taken about possible future improvement and action.
2. Does the framework and process of evaluation result in appropriate action? In this case the resultant action will remain the responsibility of the organisation according to weaknesses or obstructions they have identified in respect of their engagement with knowledge management. The process of evaluation facilitates this course of action, it does not however recommend a specific course of action, but acts as a guide for an iterative cycle of learning and improvement based on continual development and increasing understanding of knowledge management by those who participate, providing the ability to reach a position of consideration for a desirable and/or feasible way forward.
3. Does the framework and process of evaluation have the capacity to judge and modify its normative content? The evaluation will be undertaken by the individuals within the organisation, for the organisation and as such is intended to have the ability to flex and adapt according to specifics identified by the evaluators without altering the architecture or overall design, therefore the fitness for purpose should be maintained in this dimension.

The foregoing discussion adds to the robustness and theoretical underpinning of this framework and process of evaluation. The next stage is to test this in practice. For convenience, the evaluation matrix is summarised in table 6.5.1:

Table 6.5.1 Summary of Evaluation Matrix

	Know How	Know Who	Know Why	Know That	Know When	Know Where
Definition of knowledge management						
Management						
Strategy						
Internal Environment						
External Environment						
People						
Processes						
Activities						

The matrix comprises three main components:

1. The Domains and Elements
2. The questions
3. The distinction between what currently happens and what ought to happen

The Domains are based on discussions in previous chapters and form the main structure of the framework. The elements within provide the focus for exploration into specific areas if required by the organisation.

Skyrme and Amidon's (1997) six questions of investigation are used to explore each Domain at a high level in the first instance. This process is undertaken by questioning the know how, know who, know why, know that, know when, and know where, of the different Domains. If a weakness is detected then the elements within the Domain offer the opportunity to delve further into the area in a structured way, revealing what aspect within the Domain requires improvement or development.

The method of 'scoring' the organisation's readiness requires further breakdown and careful phrasing of the questions according to each Domain. It requires the individual to enter a score from 1-4. For each Domain the definition of 1 will be the worst case scenario for knowledge management whilst 4 will represent the best case scenario. For example, if an individual considers the organisation to be weak in the awareness or understanding of who to contact to gather specific expertise, but regards this as being essential to a specific role, they may well score 1 for the current situation and 4 for level of importance. This gap will then have been identified by them and therefore exposed as an area that requires improvement if knowledge management is to be successful. This is the empowerment of critical self reflection and transfers ownership for the evaluation and any required improvement or action to the organisation rather than an external evaluator telling the organisation what should happen. The scores are then transferred to a diagram for analysis and presentation of the results.

It is expected that if an organisation requires expertise in specific areas, they will also regard this as being critical to the business. If a specific area is weak, but the organisation regards this as being important or critical, then this will require further exploration, which will be undertaken by drilling down into the elements to identify where improvements must be made. The organisation can have the opportunity at this stage to focus the exploration into certain Elements only, but for those that are excluded, justification should be sought because the Elements identified have been included as a result of research, peer review and justification confirming their importance. The framework is flexible enough to be used as an organisational, group/departmental, or individual exercise. In addition different levels in the hierarchy of an organisation can be the focus, whether senior management, operational management or the workforce generally. A 360 degree approach is recommended where staff and external stakeholders can assess direct management, peers and subordinates. It is for the organisation undergoing evaluation to choose the preferred approach. Testing of the use and application of the framework and evaluation matrix was undertaken with in the University of Glamorgan.

7. APPLICATION AND TESTING OF THE FRAMEWORK

7.1 Introduction

This section equates to phase four of the research design, illustrated in figure 7.1.1. The objective was to test the use of the framework and evaluation matrix, by requesting various staff to complete the assessment. Two key objectives to be met were:

1. Identify any improvements to the generic framework and evaluation matrix
2. Identify changes that might be made in the application of the matrix specific to the University of Glamorgan.

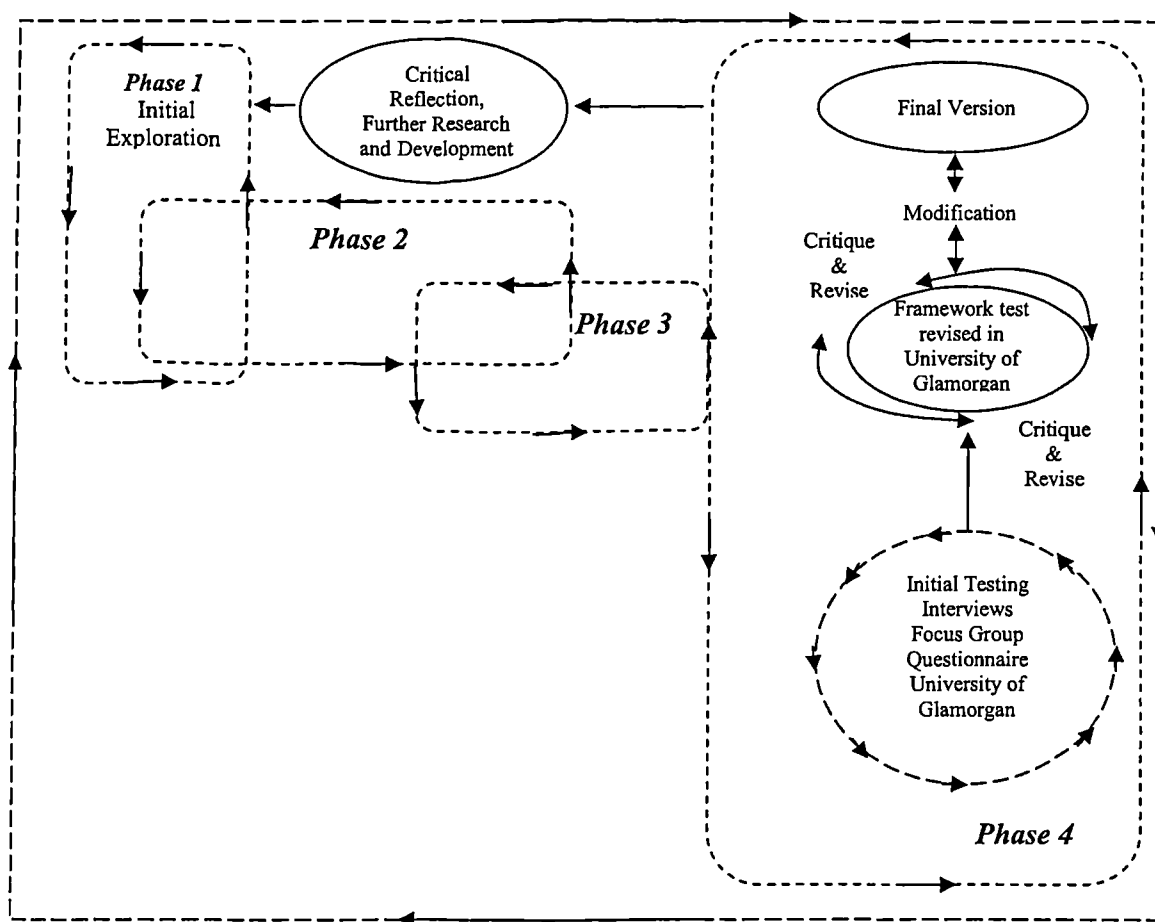


Figure 7.1.1 Research Design Phase Four (adapted from figure 2.2.1) – Application and Testing of the Framework

7.2 Approach Taken

The approach taken was twofold. The step one test was left open for the evaluator to find an autonomous way forward. By taking this approach it was intended to establish the types of changes that might emerge with the minimum of guidance, and how an organisation might choose to take the evaluation forward with no prescription. Comments and improvements to the framework were incorporated, afterwhich, an amended version was tested again by a different group of staff.

The outcome of step one delivered important and necessary preparation and learning before embarking on step two. This included the need for a definition of knowledge management to engender some level of understanding, and strict guidelines in completing the questionnaire to ensure that evaluators can complete the questionnaire independently. However, in terms of major changes to the Domains and Elements and structure of the generic framework, none were forthcoming, highlighting that this test coupled with previous critical review had now reached a reasonable point of saturation. In summary, the changes to the evaluation matrix from a generic perspective at this juncture included clarifying some of the questions, use of phraseology that conjure up images (i.e. use of the term workforce reflects a factory system, which should be replaced by use of the term staff), and amending the phraseology used for scoring to directly reflect the question being asked.

The primary learning from step 1 related more to the application of the matrix in the University, the most common criticism being the desire to categorise staff to achieve a balanced evaluation of the overall organisation, rather than taking an overview, or offering a cultural feel based on perceptions. The feeling was that if evaluating the organisation generally, different responses will emerge according to the category of staff being considered. Categories of staff are:

Administrative (APT&C)	Corporate
Academic	Manual
Directorate	Senior Management

In the application for the University of Glamorgan, the importance of establishing which category of staff was being evaluated to provide a balanced perspective of the overall organisation was fervently expressed. For example, Senior Management or Directorate may be expert in certain areas, whereas manual staff not so, but depending on the area being evaluated it may not be relevant for manual staff to be expert or vice versa. Whilst the opportunity to clarify certain scores is provided for through additional comments, evaluators found it difficult to give an overview of the entire workforce as it is so diverse, and in the process of considering each question a perspective of different categories of staff was emerging which could result in inconsistency and possibly skewed results, or a benign and neutral score. For example, when considering management one evaluator undertaking the evaluation initially focussed on Directorate, but when questions regarding the broader workforce were considered, the focus shifted to either manual or administrative staff, or the inclination was to point out that whilst administrative staff are likely to be poor in this area, academic staff are likely to be practitioners. This however confirms the flexibility of the process providing options when applying the evaluation to an organisation. For example, a second approach during phase one was to facilitate the request to state upfront which category of staff would be the focus of evaluation and all responses would relate to that category of staff only. This would mean that the matrix would have to be reproduced six times and customised to focus specifically on categories of staff which does not pose any major difficulty. Alternatively the categories of staff could be coded and the code entered onto the matrix to reflect the particular category of staff. For example staff could be coded as follows and entered into the evaluation matrix according to the evaluator's perception of their position according to the question being asked, as demonstrated in table 7.2.1:

Administrative (APT&C)	= AD	Corporate	= C
Academic	= A	Manual	= M
Directorate	= D	Senior Management	= SM

Table 7.2.1: Example of Categorising and Entering Scores onto Evaluation Matrix

Current Situation 1= aware but vague 2 = understands 3= practitioner 4 = expert				Importance to the organisation 1= not important or necessary, 2= important, 3= essential 4= critical			
1	2	3	4	1	2	3	4
AD C M			A D SM	M	AD	C	A D SM

To overcome the ambiguity and confusion that may arise as suggested in phase one, individuals or groups who are participating in an evaluation can therefore state the focus of the evaluation up front, i.e. an evaluation of Directorate, Senior Management, APT&C staff, and so on, from which generic results can then be presented through the analysis, and categories of staff can be identified as requiring improvement in certain areas.

Whether categories of staff are explicitly stated in this way or a generic overview of the organisation is undertaken, participation must be cross organisational and/or 360 degree to meet the requirements of triangulation. For example, as discussed in chapter one, social research of this nature is high in subjectivity and given the author's involvement as a participant observer, it was essential to remain aware and where possible strive to achieve some level of objectivity and reliability of the research overall and in an organisational context. Triangulation provides a recognised and useful approach to reduce ambiguity and increase reliability, for example by a multi method approach, of which the testing of the framework forms one part. Previous discussion about the overall research design in chapter two emphasised the importance of triangulation for this entire piece of research and in keeping with a recursive approach, this is repeated again at this

level. Denzin 1978 (in Decrop, 1999, pp158-164), identifies four different methods of triangulation:

- data triangulation, which involves the use of information, derived from literature sources and fieldwork;
- method triangulation which is the use of multiple methods to solve a single problem;
- investigator triangulation, which requires several different researchers to interpret the same data thus avoiding personal bias, or alternatively, the use of an external auditor to review information and confirm its validity;
- theoretical triangulation, which is a multi-perspective such as anthropology, psychology, sociology etc to interpret the same data.

This approach to testing of the framework meets the requirements of triangulation, incorporating Denzin's (1978) method, investigator and data triangulation. The requirements of method triangulation were met at the development stage through primary and secondary research and fieldwork conducted in the University of Luton, external consultants, peer review as indicated previously, progressing to this stage of application and testing the conceptual framework in the University of Glamorgan.

Investigator triangulation included secondary research such as the University of Luton MORI Survey (Wisdom and Kingdom 1999) and a communication survey conducted by Bell Pottinger (1999), in addition to the use of external collaborators ensuring the feasibility of the conceptual framework. At this test stage the process within which the actual testing of the framework is undertaken requires several different evaluators to interpret and comment on the same approach in action, thus avoiding personal bias.

Data triangulation included literature and fieldwork based on the University of Luton as a case study and included the author's own surveys conducted within the University of Luton such as Health and Wellbeing survey (Jack 1999), change management focus group (Jack 1999), collaboration with other organisations, peer review and input from consultants all in the development of the framework. The actual full application in a

university setting, utilising a “final” framework includes information derived through organisational research and this is illustrated in figure 7.2.2:

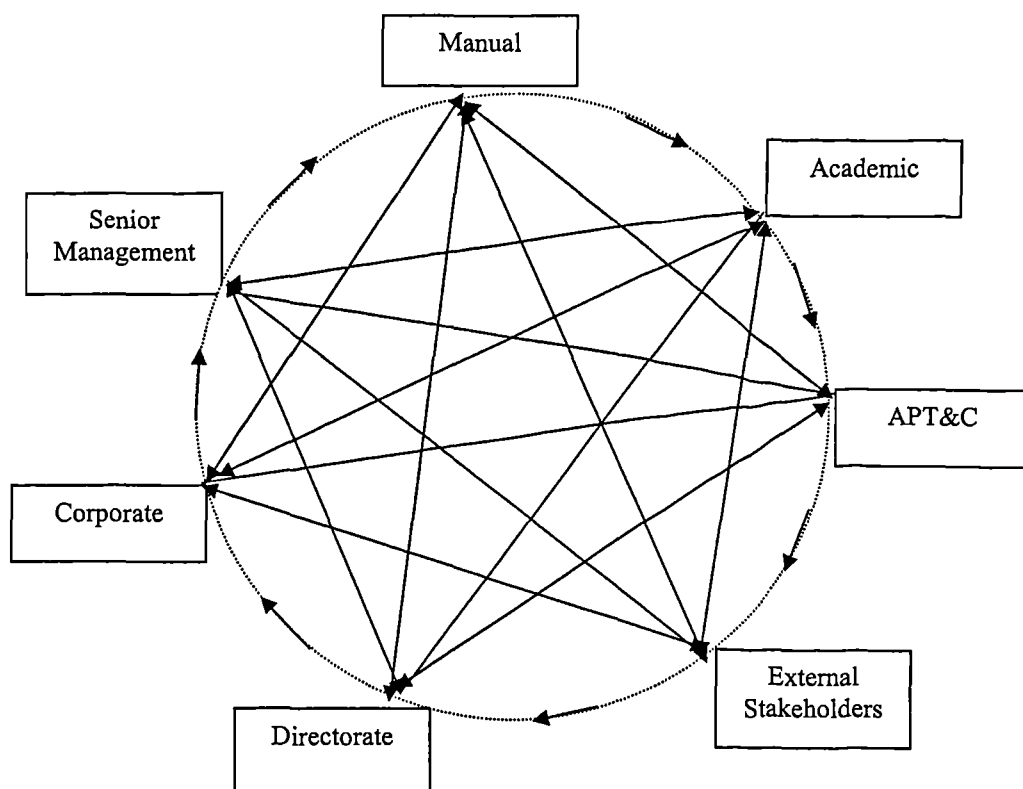


Figure 7.2.2 Triangulated approach in application of Knowledge Management Framework

Figure 7.2.2 explicitly demonstrates how the evaluation can be undertaken throughout the organisation from any perspective which provides a robust and rounded view of the organisation's ability to engage with knowledge management. The arrows identify the cyclical approach to an organisational evaluation where different categories of staff can evaluate each other. If an overview is undertaken without categorising staff, then for balanced participation, the analyst would be required to ensure representation from each category to offer a broad overview. For purposes of this pilot test, APT&C, Corporate and Senior Management categories of staff participated during step two.

In terms of the concept of knowledge management more broadly speaking, the feedback from the initial step one test and critical review also emphasised the social conditioning into organisational hierarchy. For example, the evaluators who completed phase one were very focussed on hierarchy and position rather than viewing the organisation in a broad lateral systemic way, which could also indicate to some extent the misperception of what knowledge management represents, i.e. a cross organisational (both horizontal and vertical) concept. This then leads to a consideration that in order for the organisation to self evaluate they may first need to be educated about knowledge management and the importance of the definition for the organisation is emphasised. However, even with an overview and explanation of knowledge management, it is difficult for an individual to sustain a level of understanding without returning to the constraints, power and politics of the hierarchical structure.

Despite statements about confidentiality and anonymity, the evaluators appeared fairly guarded in their responses and to some extent tended to want to divert the exercise to suit their own agendas. They provided a protectionist response making statements such as “staff in their areas do this anyway” and either focussing on or avoiding scoring certain categories of staff in particular Directorate or Senior Management. This brings to bear the importance of considering Checkland’s (1981) Social Systems Analysis in the context of the ethos of evaluation, and consideration of roles relating to the position in the organisation, relationships with others, and job content. From this evidence and observation, it is recommended that the user of Soft Systems Methodology should conduct a Social Systems Analysis after every interview, conversation or review of related documentation and phase one confirmed that an awareness of this issue is maintained during analysis. In addition, Checkland’s Political Systems Analysis considers how power is obtained and disposed, and how that power is utilised in relationships between different interest groups. The political dimension is unavoidable in any human situation as individual perspectives, agendas, interests and positions of power will influence every aspect of a social type investigation and balance between these elements is important.

Finally, in step one, the comment was made that the questionnaire seemed long and quite repetitive resulting in a loss of interest, particularly so in the People Domain and Communication Activities Domain. The view was that really the essence of the entire matrix appeared to be about people and communication and the comment was made that it might be more appropriate to omit the People Domain and list the actual different initiatives or communication activities and request the evaluator to identify what currently takes place and then perhaps list in order of priority the most effective for knowledge management. For example, does the organisation undertake specific communication activities? This, however, remains specific to the organisation and would be better initiated at the second stage of evaluation when drilling down into the elements, whereas the generic questions about communication relate more to the overall culture and ability of the organisation rather than the activities that underpin this. Based on previous research and subsequent testing of the evaluation matrix, the broader view was that the People and Communication Activities Domains are generically relevant, because the questions represent different contexts, and when considering the elements within each Domain, different analysis and results may emerge, which would otherwise be lost.

Having made the changes and taking on board the learning achieved from step one of the testing, step two was embarked upon with a focus group comprising Senior Management, Corporate and APT&C staff, none of whom were involved in step one.

This group were presented with a broad definition of knowledge management and guidelines to complete the questionnaire, which included the fundamental 'rule' to maintain an overview of the organisation rather than considering categories of staff, and in doing so it was their feel for how the university generally functions in the context of knowledge management. The focus group did not experience any difficulties in completing the questionnaire from a process perspective, but did comment on the challenge to maintain a broad overview stating that it required a depth of reflection that they had never given time to before. There was a general consensus that the more prior knowledge they had about the broader organisation, the more intense and challenging the task was. For example the staff (irrespective of position) who have a fairly focussed role

and no experience across the organisation offered an overview from a base of limited boundaries and knowledge, whereas the staff with more knowledge and experience across the organisation, perhaps have held several roles in different departments, could offer a broader view. The more experienced staff felt the need to categorise staff given the diversity of their experience, whereas the staff with less cross organisational experience did not find this to be an issue.

Overall the focus group felt that the generic framework was robust and capable of flexing to meet specific intervention requirements in most organisations. General comments made follow:

There are a lot of things in this that you do think about but they are never made clear in an action oriented way. There are opportunities to lay the foundation for knowledge management through the university induction, departmental induction, which improve knowledge about the university. Induction, though should be spread throughout the first year because as knowledge improves the context changes and how you would use the knowledge then changes. It is a longer process than it is given time for. Induction sets the context of the role and development of the individual.

I found it difficult to maintain a very broad overview, therefore feel that some answers are diluted and question the value of my responses. I would prefer to assess categories of staff that I know because I don't know what I don't know. Categories of staff function on a daily basis in different ways.

Generally I found the questionnaire fairly good to complete, raising issues that should be made more explicit. It shows staff perceptions of how things work, but don't actually exist.

When picturing groups of staff, it is difficult to break away from categorisation. Without categorisation it pushes scores to an average rather than an accurate position. This is more apparent when considering the current with level of importance.

It feels easier not to think too long and hard with these questions, but rely on the first response and move on.

The more you seem to know about the university, the more difficult it is to disentangle your thoughts to answer from a birds eye view.

The questionnaire is very wide making you think outside the box.

Table 7.2.1 summarises specific comments that emerged during each question and distinguishes between the critique received about the generic framework and adaptations and/or comments that were suggested in relation to application in the University of Glamorgan. In keeping with the concept of internal and external critique the responses of the author to this feedback are also provided. The author's responses are intended to focus on the development and improvement of the framework, rather than any real evaluation of the organisation. The reason for this is that it is the framework and process of evaluation that is being tested to establish its fitness for purpose. To fairly evaluate the organisation would require a broader and increased number of staff involved to reach a fair balance and overview of the organisation.

Table 7.2.2: Summary of critical review and reflection/responses from phases 1 and 2 of testing - University of Glamorgan

Domain	Comments about Generic framework	Comments in context of application of Framework to University of Glamorgan	Critical reflection/response
<p>Management KNOW HOW</p> <p>A. How well does management know how to get things done through formal procedures?</p> <p>B. How well does management know how to get things done through the experience and tacit knowledge of others?</p> <p>C. How well does management know how to get things done through their own knowledge as a team?</p>		<ul style="list-style-type: none"> I have taken a senior management view of Directorate here. The results could be different at different levels. Directorate may not be as good as some senior managers The closer you get to the top the more know how breaks down. People lower down the hierarchy need to work together whereas Directorate tend to do their own thing. Management only seem to be as good as they are depending on the support staff around them. 	Three organisational specific comments were made, with no change required to the questionnaire.
<p>Management KNOW WHO</p> <p>A. To what extent does management know who to network with internally to address a specific problem, issue, idea etc?</p> <p>B. To what extent does management know who to network with externally to address a specific problem, issue, idea etc?</p>		<ul style="list-style-type: none"> An awareness of external contacts requires more knowledge at the top Important but management rely on subordinates to have that information 	Two organisational specific comments were made, with no change required to the questionnaire.
<p>Management KNOW WHY</p> <p>To what extent does management know why knowledge management is relevant to the purpose, mission, and vision strategic direction?</p>	Phase one - Change IS to MAY BE		Not accepted and no change made. By stating that knowledge management may be relevant to the purpose etc, reduces the level of importance placed on the concept, which is the essence of what is being explored over and above all else. Previous research clearly identifies that knowledge management is relevant, not may be relevant.

Management KNOW THAT To what extent does management know that the strategic direction of the organisation is conducive to knowledge management?	Phase one - This question is confusing. How can the strategic direction be conducive to knowledge management. Conducive may not be the right term. Perhaps the question should be turned on its head. Does management know that knowledge management is important to strategic direction or does management know that knowledge management should be part of the strategic vision?	Essential with other things	Accepted and changed accordingly for phase two testing to: To what extent does management know that knowledge management is conducive to the strategic direction of the organisation?
Management KNOW WHEN To what extent does management know when to maximise on the potential opportunities that may arise from new knowledge?		<ul style="list-style-type: none"> • Management would need to understand the subject of knowledge management before benefiting from it • If it fits with their agenda then this would score fairly well, but if not on their agenda then there is no interest and opportunities are lost. • Knowledge about skill gaps, nationally and within the Welsh economy, seem not to materialise in relevant degree areas. 	Although the first comment is specifically made about management, this raises an issue about the level of understanding that may be required about knowledge management before an organisation can critically self evaluate. Hence the need for an initial broad definition in the first stage of an assessment from which the process of self evaluation can engender further understanding and learning before exploring specific elements at which point an organisation can develop a specific definition for them, and place them in a position to evaluate against that definition.
Management KNOW WHERE To what extent does management know where to gain new knowledge in order to maximise on new opportunities?		Depends on the manager. Some are happy to plod along with knowledge they already have.	No change required to the questionnaire.
Strategy KNOW HOW To what extent do formal policies and procedures contain the Know How to implement strategy (i.e. meet the objectives)?	This question is confusing clarify by inserting DOCUMENTED formal policies and procedures. Scoring categories do not reflect question. These should be rephrased. 1= does not exist, 2= Ambiguous, 3=Clear, 4= Explicitly Clear	APT&C staff do not really have much access and do not influence anything	Accepted and changed accordingly for phase two testing to: To what extent do documented formal policies and procedures contain the Know How to implement strategy (i.e. meet the objectives) Scoring categories rephrased
Strategy KNOW WHO To what extent does the strategy enable staff to know who to contact to help them implement strategy across the organisation?	Scoring categories do not reflect question. These should be rephrased. 1= does not exist, 2= Ambiguous, 3=Clear, 4= Explicitly Clear		Accepted and changed accordingly for phase two testing.

<p>Strategy KNOW WHY To what extent do staff know why the strategy is progressing the organisation in a specific direction?</p>	<p>Scoring categories do not reflect question. These should be rephrased. 1= do not know, 2= Some knowledge, 3=Aware, 4= Fully knowledgeable</p>	<p>It is difficult to consider the staff overall. Categorising staff would be more focussed and beneficial.</p>	<p>The comment about scoring categories accepted and changed accordingly for phase two testing.</p> <p>The comment about categorisation of staff recognised and appreciated, but only in context of application to organisation if the organisation chooses to undertake an evaluation following a generic overview. In the initial stages, an overview will assist in prioritising Domains of weakness which can subsequently be evaluated and staff categorised at the element stage. This may be more time effective and efficient avoiding unnecessary exploration.</p>
<p>Strategy KNOW THAT To what extent do staff know that the strategy requires cross organisational team working?</p>	<p>Scoring categories do not reflect question. These should be rephrased. 1= do not know, 2= Some knowledge, 3=Aware, 4= Fully knowledgeable</p>		<p>Accepted and changed accordingly for phase two testing.</p>
<p>Strategy KNOW WHEN Do staff know when objectives within the strategy should be met?</p>	<p>Scoring categories do not reflect question. These should be rephrased. 1= do not know, 2= Some knowledge, 3=Aware, 4= Fully knowledgeable</p>		<p>Accepted and changed accordingly for phase two testing.</p>
<p>Strategy KNOW WHERE Do staff know where to locate the organisational strategy?</p>	<p>Scoring categories do not reflect question. These should be rephrased. 1= do not know, 2= Some knowledge, 3=Aware, 4= Fully knowledgeable</p>		<p>Accepted and changed accordingly for phase two testing.</p>

Internal Environment KNOW HOW A. Do staff know how to effectively share experience and tacit knowledge? B. Do staff know how to share hard Information?		<ul style="list-style-type: none"> For some staff this is not necessary. It depends on the context and the role. It may be more important for academic staff than support staff. Knowing is one thing, actually putting into practice is another. Doesn't really happen. 	No change required to the questionnaire.
Internal Environment KNOW WHO A. Do staff know who to network or interact with informally? B. Do staff know who to interact with in a formal manner?		Again this depends on the level of staff and context, whether academic or support	No change required to the questionnaire.
Internal Environment KNOW WHY Do staff know why their roles, contributions and experience are important to the organisational strategy?		The appraisal process should clarify this. Depends on who you ask	No change required to the questionnaire.
Internal Environment KNOW THAT Do staff know that the technology (software) should be understandable and user friendly to the staff base?		<ul style="list-style-type: none"> Sometimes IT staff seem to make it difficult so that staff don't understand and have to refer back to their expertise. IT staff probably understand users need to understand, but struggle to empathise and make it happen in many cases 	No change required to the questionnaire.
Internal Environment KNOW WHERE A. Do staff know where they can meet informally for discussion and exchange of ideas? B. Do staff know where to locate hard based information (i.e. central point)?		<ul style="list-style-type: none"> Staff tend to meet in catering outlets or office tea rooms The scores reflect academic and APTC staff, whereas manual workers do not know. For staff that are not at a management type level, importance would be 2, because it is manager's responsibility to cascade the information down. 	No change required to the questionnaire.

		<ul style="list-style-type: none"> • Informal meetings can happen anywhere, and they will happen anyway irrespective. This is important, but not essential or critical. • If specific to job yes, if it relates to broader issues then no. • Know where, but time to do is always a problem 	
<p>External Environment KNOW HOW Do key players know how to take action in the external environment:</p> <ul style="list-style-type: none"> a. Locally b. Regionally c. Globally 		These scores exclude Directorate	No change required to the questionnaire.
<p>External Environment KNOW WHO Do staff know who coordinates external contacts and networks to avoid duplication of effort and ensure an efficient approach?</p>		For example no coordinated approach to employer liaison across all the university departments	No change required to the questionnaire.

External Environment KNOW WHY Do staff know why the external environment impacts on the strategic direction of the organisation?		These scores are based on the perception that it is about those who need to know	
External Environment KNOW THAT Do staff know that the external environment is used to benchmark internal training, experience and intellectual capability?		<ul style="list-style-type: none"> This is not put into practice for various reasons relating to time, consent and generally the organisation often don't realise capability of own intellectual base. This should happen but it doesn't 	No change required to the questionnaire.
External Environment KNOW WHEN Do staff know when to take action to improve competitive position relative to the external environment?		I would make a distinction here between academic and support staff. Academic staff would tend to score high in my opinion.	No change required to the questionnaire.
External Environment KNOW WHERE Do staff know where to locate external information that will advance the competitive position?		This score refers to academics only	No change required to the questionnaire.
People KNOW HOW A. Does the broader staff base know how to get things done through formal procedures,	<ul style="list-style-type: none"> Who is the general workforce? Academic or support? General workforce seems to reflect factory type situation and not a higher education institution. 	In the scoring here A in the grid = academic and S = support	<p>The comment about use of the term workforce accepted and terminology changed to broader staff base for phase two</p> <p>The comment about the question having had already been</p>

manuals etc B. Does the broader staff base know how to get things done through the experience and tacit knowledge of others?	<ul style="list-style-type: none"> This question has already been dealt with 		dealt with relates to one respondent who categorised staff up front by distinguishing between academics and support. Although this implies repetition, no change was made because the elements underpinning will result in a different analysis and context.
People KNOW WHO Do staff know who does what according to roles?	This question should be rephrased. Subject area immediately leads to academic.	In the scoring here A in the grid = academic and S = support	Comment about rephrasing of question accepted and changed for phase two to: Do staff know who does what according to roles beyond job titles.
People KNOW WHY Do staff know why their role and contribution to the organisational strategy and vision is important?	Because of the way the questions have been answered, this has already been dealt with	Opportunity in appraisal to be more explicit but doesn't always happen, e.g. the who, why where is the issue going, and feedback.	The comment about the question having had already been dealt with relates to one respondent who categorised staff up front by distinguishing between academics and support. Although this implies repetition, no change was made because the elements underpinning will result in a different analysis and context.
People KNOW THAT Do staff know that their progressive education, experience and training is important to knowledge management?		<ul style="list-style-type: none"> This is from a support staff perspective This is becoming essential as time goes on 	No change required to the questionnaire.
People KNOW WHEN Does the workforce know when to take action to implement strategy?		<ul style="list-style-type: none"> This is relevant to those that should know, not the broader staff base Because of the way the questions have been answered, this has already been dealt with Should know by the direction given by management. Some individuals seem to hold on to knowledge i.e. I know something you don't Yes, but not if asked this question directly 	No change required to the questionnaire.
People KNOW WHERE Does the workforce know where to locate information needed though the use of IT or paper based functions?		Because of the way the questions have been answered, this has already been dealt with	The comment about the question having had already been dealt with relates to one respondent who categorised staff up front by distinguishing between academics and support. Although this implies repetition, no change was made because the elements underpinning will result in a different analysis and context.

Processes Policies, procedures KNOW HOW Do staff know how to use discretion and judgement to contextualise business processes?	Business Processes should be clarified further by defining them as policies, procedures.	Depends on the process, policy, procedure. In some cases it is not possible to use discretion and the procedure has to be followed exactly.	Comment accepted and changed for phase two to Do staff know how to use discretion and judgement to contextualise organisational processes policies and procedures.
Processes KNOW THAT Do staff know that business processes underpin the strategic direction of the organisation?		This is ambiguous for the majority of staff. It depends on individual roles and the need to know, e.g. if a problem arose. It is not a transparent part of the university business process. Everyone does not have to know everything but should be aware of someone who does know	As above
Processes KNOW WHEN Do processes policies and procedures identify the know when to take action where relevant?		Struggling with question. Various policies, procedures and some identify action, whereas others do not	Although the comment was made that the evaluator was struggling with the question, this is taken not to be a problem with the question, but a problem with answering in the context of the organisation and diversity of policies, procedures.
Communication Activities KNOW HOW Do staff know how to engage with various informal communication activities to share knowledge and experience?	The questionnaire is quite repetitive and tends to have a significant focus on communication. Communication activities might be better listed here with a request to identify which of the activities currently take place and a prioritisation of those that may be considered to be effective and important to the University.		This comment is recognised as being relevant to further exploration in relation to the elements and activities that underpin the Domain specific to the organisation and not the generic framework
Communication Activities KNOW WHY Do staff know why cross organisational communication activities are relevant to the purpose, strategy, direction?		Awareness and understanding is improving, especially the more a broader view of the organisation is made clear, which relates back to people sharing.	No change required to questionnaire.

<p>Communication Activities KNOW WHEN Do staff know when to initiate specific and timely communication activities for effective action?</p>		<p>Staff know when to do this when it impacts on them, generally taking a reactive approach.</p>	<p>No change required to questionnaire.</p>
<p>Communication Activities KNOW WHERE Do staff know where to congregate to engage in informal communication activities?</p>		<p>There is no where I would consider to be conducive to this.</p>	<p>No change required to questionnaire.</p>

In summary, the process to enable the application of the framework for critical self evaluation is robust from a theoretical perspective meeting the requirements of intervention based on systems thinking. The evaluation process has been developed with a clear knowledge management investigative procedure based on Skyrme and Amidon's (1993) six questions of investigation. Drawing from Denzin (1978), triangulation to achieve a balanced approach has been maintained.

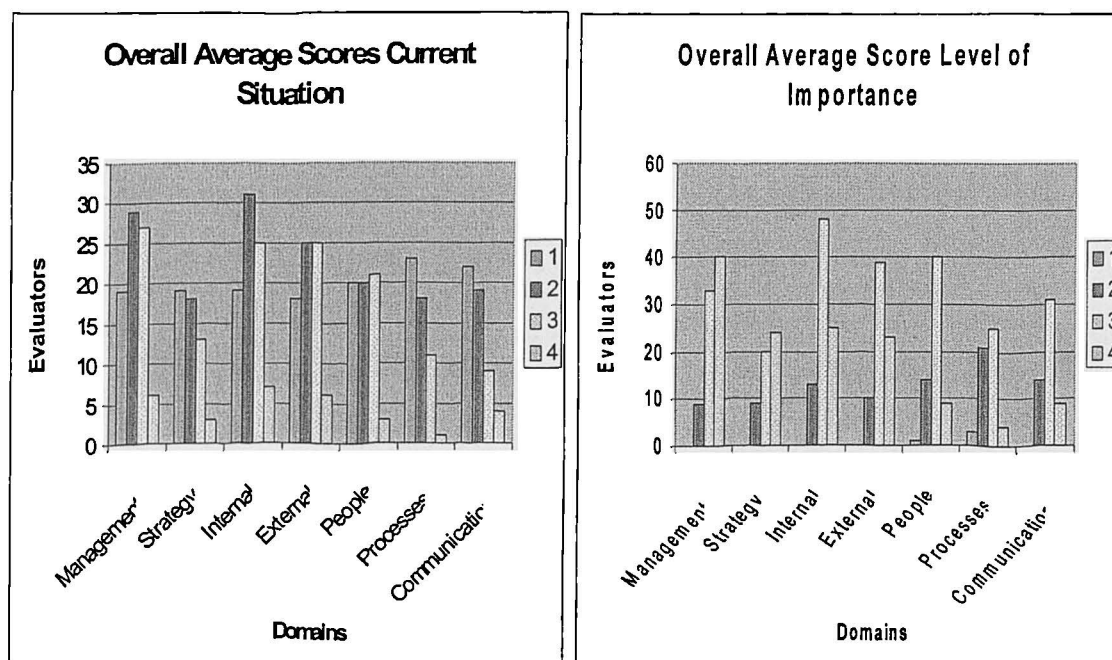
7.3 Results

Testing of the framework and evaluation matrix has resulted in specific changes to the process from an organisational perspective only, but no change to the Domains and Elements, confirming that development, based on previous research and empirical work, has reached an acceptable point of saturation. It is clear from the feedback, however, that an organisation may want to be more focussed than generic by categorising staff and adapting the framework to suit their specific needs and the framework and evaluation matrix is capable of flexing to meet such needs, without altering the structure. This may involve the addition of Elements to reflect specific activities, but if the organisation wishes to omit Elements or Domains, justification of this should be sought; otherwise significant gaps may appear in the final analysis.

Having taken into consideration the feedback received regarding the generic framework and process, this section now discusses the analysis of the University of Glamorgan and presents results that are intended to show the outcome of the application of the evaluation matrix, and to provide an indication of the university's readiness to engage with knowledge management. As this is a continuation of the testing of the framework at the application stage, it is not intended to be a comprehensive analysis of the university, but to establish that the framework is useable to a relevant conclusion. The following section expresses the results of the evaluation in graphical form using column graphs. The x axis at the bottom identifies the Domains within which the questions were asked. The y axis to the left shows the number of evaluators who identified the scoring in each Domain and the key to the right hand side displays the scores 1-4, one representing the worst case scenario and 4 the best case scenario. It should be noted that throughout where there is

no indication of a score, this raises a question in its own right as to why this may be the case, and presents a requirement for further analysis by exploring the Elements further. The left hand graph identifies the current situation and the right hand graph identifies the level of importance. For clarity and greater understanding, discussion about each graph is undertaken using percentages of responses.

Figure 7.3.3: Overall Average Scores

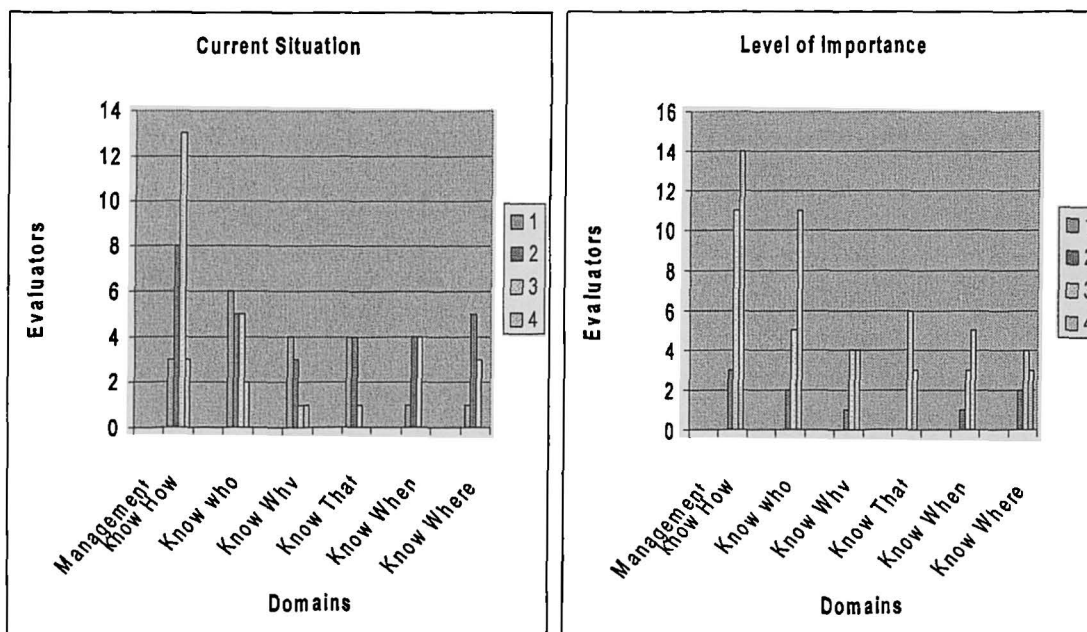


Overall the University of Glamorgan scores indicate that improvements could be made in relation to Knowledge Management Readiness with 53% scoring one, reflecting a vague unclear perception in the current situation. 35% may have an understanding with 5.9% at practitioner level and 5.5% at expert level. This is compared to the majority evaluators considering knowledge management to be in the region of essential/critical to the university at 60%. 22.3% feel it is important, 16.6% essential and 21.1% critical. Only 0.9% feel it is not important and not necessary. The Management and Internal Environment Domains are regarded by the evaluators as being the most essential/critical to the University. The level of importance that the evaluators have placed on each domain is listed in order of priority as follows:

Management	18.9%
Internal Environment	17.6%
External Environment	16.1%
Communication Activities	13.2%
People	12.7%
Strategy	11.4%
Processes	9.8%

Exploring the Domains further, the following graphs identify the overall scores for each Domain, with highlights identifying areas that may require improvement.

Figure 7.3.4 Management Scores



The overall results of Management indicate that the evaluators' perception of the current situation is that managers understand/practice at 44% and the level of importance of

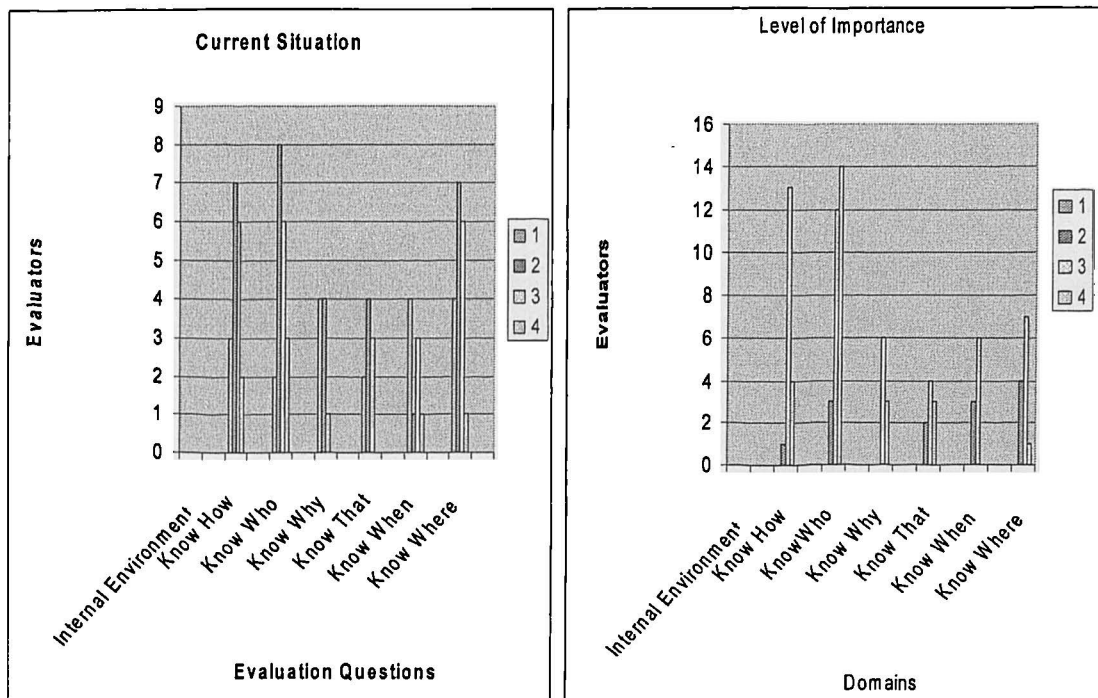
various aspects average out at 38% essential/critical to the university. The main strength is knowing how to get things done through formal procedures with 88.8% at practitioner/expert level and 88.8% is identified this as being essential/critical to the university. There are two areas of weakness. The first is knowing how to get things done through team knowledge. The evaluators' perception is that the team do not perform effectively with 33.3% indicating that the team is at practitioner/expert level and 100% identifying this as being essential/critical to the university. This points to the need to explore team work and cross management interaction further in the context of sharing experiences and knowledge. Such an approach to working practices cascades throughout the broader university and research indicates that with appropriate senior management commitment, positive culture change could be achieved.

The second area of weakness is knowing that knowledge management is conducive to the strategic direction of the university with 11% of evaluators identifying management at practitioner/expert level and 100% identifying this as being essential/critical to the university.

These areas could be explored further by drilling down to Elements such as:

- Commitment /Creating sense of purpose/mission statement
- Critical discursive opportunities
- Relationship Management
- Communication
- Training and development specific to knowledge management

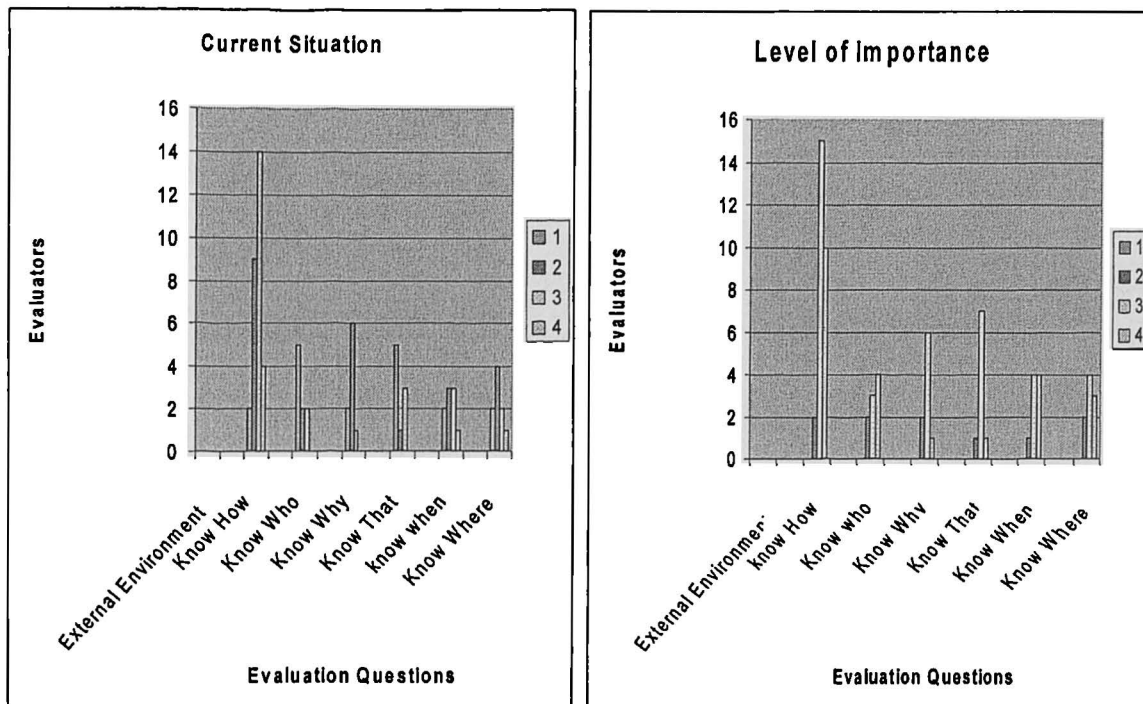
Figure 7.3.5 Internal Environment Scores



With regard to the internal environment domain, overall the scores are fairly spread, though the majority of evaluators feel that there is an awareness and understanding at 53% and 38% at practitioner/expert level. 86% of evaluators identify this domain as being essential/critical to the University. The two significant areas of weakness relate to know who to network or interact with informally with 55.5% of evaluators indicating that the university is aware but vague/understands and 100% identifying this as being essential/critical to the university. The facility to interact informally is an important requirement of knowledge management, therefore this could be explored further by focussing on the following Elements:

- Cyber Cafes
- Communal areas
- Social space

Figure 7.3.6 External Environment Scores

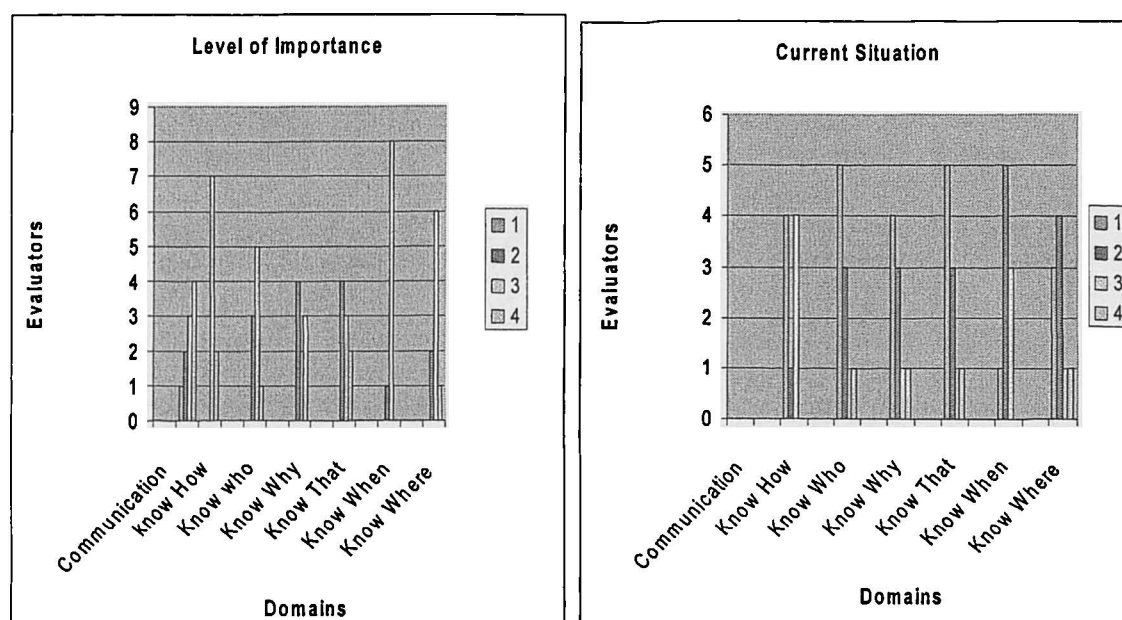


There is a similar trend in the external environment domain to that of the internal environment, with a fairly even spread of scores overall. 53.7% of evaluators indicate a current level of awareness/understanding, 31.2% at practitioner level and 46.2% at expert level. This is set against a level of importance the evaluators identify as 86% at essential/critical and 13.8% as important. Two areas emerge that may require further exploration and these are knowing how to take action in the global environment with 77.7% indicating an awareness/understanding and 77.7% identifying this as being essential/critical to the university. Knowing who coordinates external contacts and networks to avoid duplication of effort is the second area, with 77.7% aware/understand and 77.7% identifying this as being essential/critical to the university.

The Elements within this domain that could be considered are:

- External knowledge initiatives with -community groups, customers, other stakeholders
- Global issues- language dominant country cultures
- Diversification – consultancy, research & development

Figure 7.3.7 Communication Activities Scores



The Communication Activities Domain appears to score toward the weaker side of the scale in the current situation with 40.2% indicating aware but vague, 36% indicating an understanding, 16.6% at practitioner level and 6.9% at expert level. This compares to 55.5% at essential and 15.2% at critical levels of importance. Zero evaluators felt that this was not important.

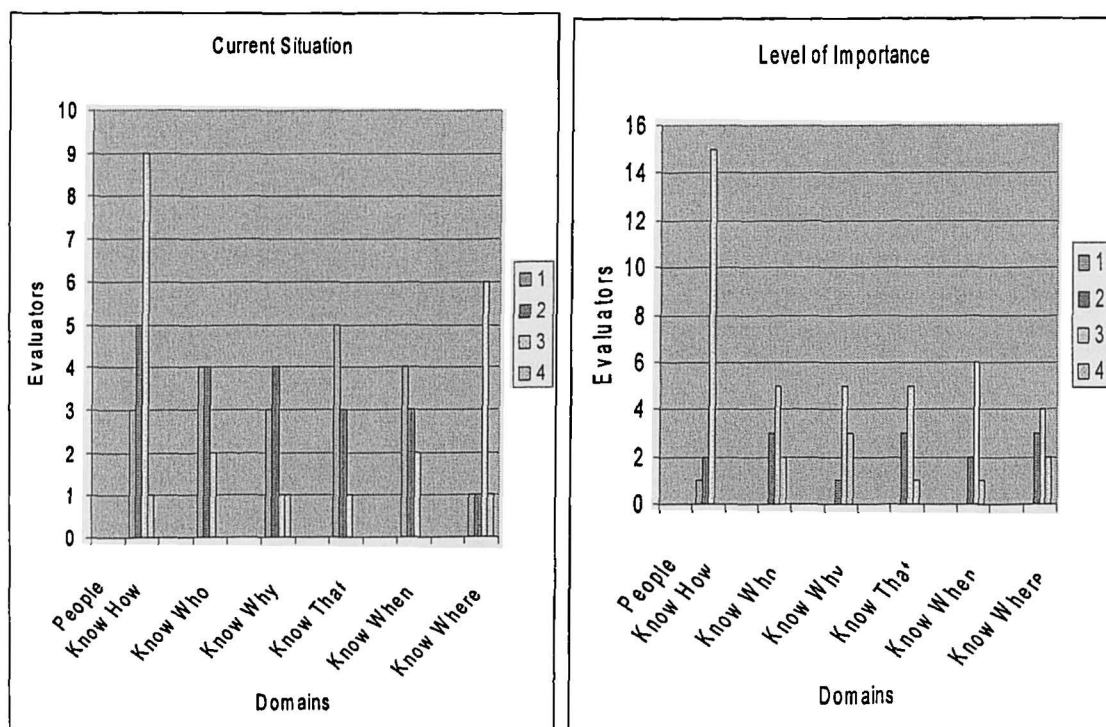
The main areas for further exploration are know where to congregate to engage in informal communication activities with 77.7% currently aware but vague and 77.7% evaluators considering this to be essential/critical to the university. Know how to engage with various informal communication activities identifies 55.5% of staff to be aware but vague/understands and 100% identifying this as essential/critical to the university.

The Elements that could be explored further to evaluate this further are:

- Networking
- Talk rooms
- Yellow pages
- Mentoring

However any communications activities would improve the informal aspect of this domain and indeed the university may have other proposals.

7.3.8 People Scores



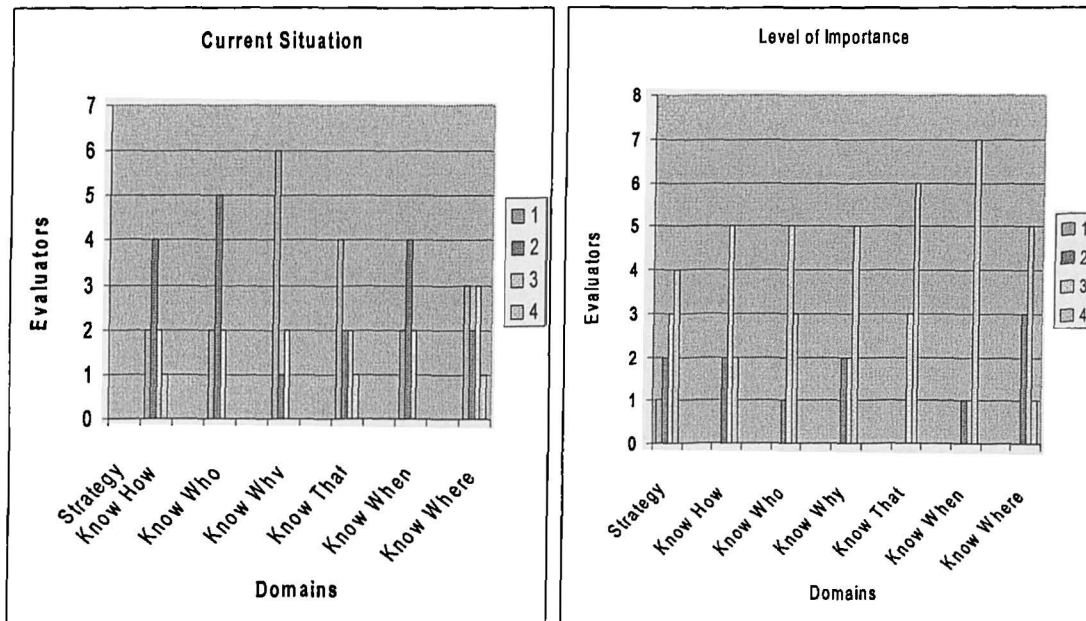
In the People Domain the overall scores show that at the current situation, 62.5% are aware but vague/understand, 37.5% at practitioner/expert level, against a level of importance with 23.4% evaluators considering this to be not important or important. 76.5% consider the People Domain to be essential/critical to the university. The main areas for further consideration relate to knowing who does what according to roles beyond job titles, with 88.8% aware but vague/understand and 77.7% of evaluators identifying this as being essential/critical to the university. A zero score was made identifying that no evaluators considered this to be not important.

In addition, know why people's roles and contributions to the organisational strategy and vision scored 77.7% in the current situation at an aware but vague/understands level, 22.2% at practitioner/expert level and 88.8% of evaluators consider this to be essential/critical to the university.

The Elements that could be explored further are:

- Feedback mechanisms
- Multiple roles/flexibility
- Expertise mapping (who knows what)
- Matrix team activities
- Job rotation communities of practice
- Roles

Figure 7.3.9 Strategy Scores

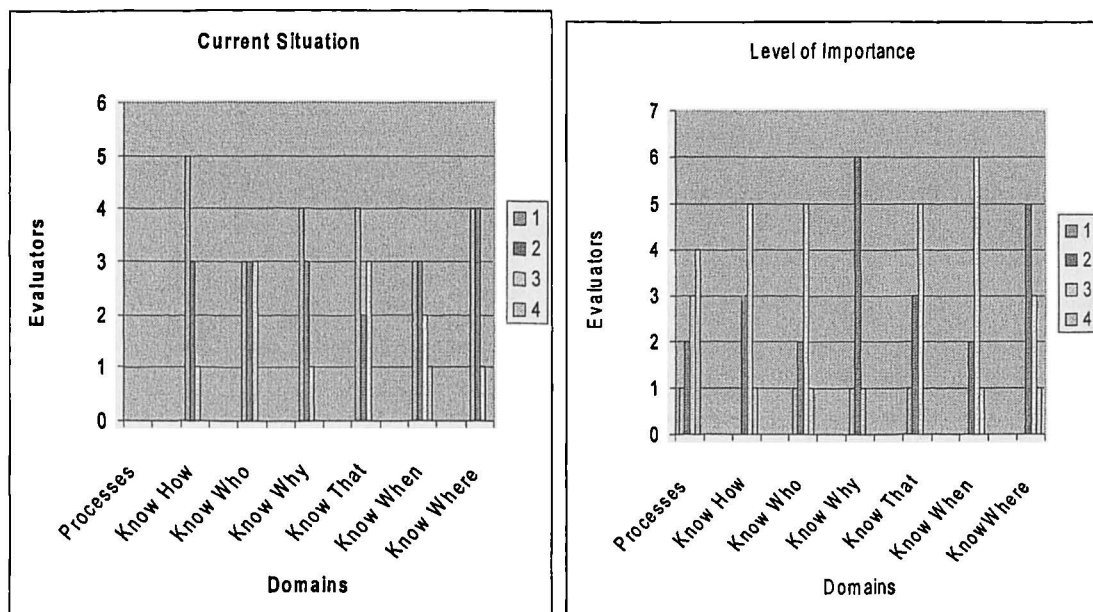


In the Strategy Domain, overall 68.5% are aware but vague/understand and 31.4% are at practitioner/expert level. A zero score is registered against not important, and 16.9% of evaluators regard this as being important. 83% consider the Strategy Domain to be essential/critical to the university. The main areas to explore further relate to the extent to which staff know why the strategy is progressing the organisation is a specific direction with 77.7% indicating no or some knowledge and 77.7% indicating this to be essential/critical. Knowing that the strategy requires cross organisational team working shows a current score of 66.6% indicating that staff do not know/have some knowledge and 100% identify this as being essential/critical to the university.

Elements that could be explored further in the strategy Domain are:

- Conversion of knowledge into measurable objectives and targets
- Evaluate review improve

Figure 7.3.10 Processes Scores



The Process Domain has emerged as the least important to the university. Evaluators indicate that 39.6% of staff are aware but vague in relation to processes, 32.7% understand and 25.8% are at practitioner level. Only 1.7% are regarded as being at expert level. In terms of level of importance 4.8% regard processes as not important, 33.8% consider processes to be important and 51.6% as essential with 9.6% as critical to the university. With regard to knowing how to use discretion and judgement to contextualise organisational processes and procedures, 88.8% of evaluators feel that staff generally are aware but vague/understands, but 66.6% identify this as essential or critical to the university. With regard to knowing why specific roles hold responsibility for identified business processes, policies or procedures 77.7% are identified as being aware but vague/understands and 77.7% regard this as being important.

The elements within the processes domain that could be explored further are:

- Central control versus devolved process
- Policies/procedures

Drawing from the foregoing test analysis, table 7.3 illustrates the evaluation matrix at the Element level, which would guide the University of Glamorgan through a more detailed and focussed evaluation using the elements identified:

Table 7.3.1 University of Glamorgan Evaluation Matrix (Elements)

	Know How	Know Who	Know Why	Know That	Know When	Know Where
<ul style="list-style-type: none"> • Commitment /Creating sense of purpose/mission statement • Critical discursive opportunities • Relationship Management • Communication 						
<ul style="list-style-type: none"> • Cyber Cafes • Communal areas • Social space 						
<ul style="list-style-type: none"> • External knowledge initiatives with - community groups, customers, other stakeholders • Global issues- language dominant country cultures • Diversification – consultancy, research & development 						
<ul style="list-style-type: none"> • Networking • Talk rooms • Yellow pages • Mentoring 						
<ul style="list-style-type: none"> • Feedback mechanisms • Multiple roles/flexibility • Expertise mapping (who knows what) • Matrix team activities • Job rotation communities of practice • Roles 						
<ul style="list-style-type: none"> • Conversion of knowledge into measurable objectives and targets • Evaluate review improve 						
<ul style="list-style-type: none"> • Central control versus devolved process • Policies/procedures 						

The matrix would repeat the process of evaluating the university in respect of these Elements with the intention of identifying the current state, and level of importance, eventually coming to a view about key areas for improvement. At this stage the application of SWOT and risk analysis could be applied to the overall university in support of decisions that the university may want to take about engaging with knowledge management.

7.4 Conclusions

This chapter emerged from research discussed previously, and focuses, in detail, on the development of a new conceptual framework. The new framework offers a holistic, critical, high-level strategic approach, in addition to more detailed operational guidance as to how to consider an organisation's readiness to engage in knowledge management, and is underpinned by theory and empirical work. This is in contrast to previously reviewed frameworks and is also different from other frameworks because it is not prescriptive, but is intended to help empower an organisation to undertake critical self evaluation at both the broad organisational level, group level, and individual level.

The framework has undergone development, critical review and improvement resultant from previous research and as a distinct and separate exercise to maintain the integrity of the work, application and testing in a university. The main emphasis of the framework is on people, which derives from the view that knowledge resides with individuals who comprise the organisation. This however is not to the exclusion of other aspects of an organisation, and the framework reflects this through the domains and elements that show the holistic and dynamic interdependency of knowledge management.

The Domains and Elements within the framework have been derived from empirical research and literature review and refined through critical reflection and reasoning, and feedback from external expertise to produce a version one and version two framework. It is recognised that the Elements may not be exhaustive, because an organisation may identify additional Elements that require consideration according to their specific

circumstances. All changes that were required as a result of feedback have been presented and the justification made clear, therefore ensuring a critically reflective and transparent process of development.

Having established the Domains and Elements, the next step was to consider in detail the approach to evaluation of the organisation. The evaluation technique was designed for critical reflection allowing for those who undertake the organisational evaluation to critically reflect during the process of evaluation and in essence the framework and approach proposed provides a guidance tool. The evaluation process draws on Skyrme and Amidon's (1997) six questions of investigation which directly explore the organisation in the context of knowledge management, and Ulrich's (1983) assessment criteria for intervention. In applying these criteria, the evaluation matrix distinguishes between what currently happens in the organisation reflecting an "is" scenario and what is considered to be important to the organisation reflecting an "ought" to happen scenario. This approach is intended to direct the organisation to identify the issues and make active choices via empowerment of critical self reflection. The organisation has the power to choose to either act or to exclude or defer the issues that are surfaced in a transparent way.

The emphasis on people remains constant and there is recognition of the need to consider roles, norms and values when undertaking a full analysis of the organisation, in addition to the idea that different levels of staff have some level of interdependence, but different perspectives. This highlighted the importance of flexibility in applying the framework and during testing, it was confirmed that this framework has the ability to achieve such flexibility.

The method of 'scoring' the organisation's readiness was kept to a simple scale of 1-4 for the current situation and 1-4 to consider the level of importance that an evaluator would place on a specific domain. By comparing scores, it was possible to expose an area that required improvement if knowledge management is to be successful. Again this approach strengthened the concept of critical self reflection and transferred ownership for

the evaluation and any required improvement or action to the organisation rather than an external evaluator prescribing to the organisation. During the course of testing it became clear that the framework is flexible enough to facilitate an organisation's focus on specific Elements only or add to the list of Elements if there was a particular problem area identified. In addition the evaluation could be conducted at an organisational, group/departmental, or individual exercise. Different levels in the hierarchy of an organisation can be the focus, whether senior management, operational management or the workforce generally.

Testing of the framework was undertaken in the University of Glamorgan in two phases using different sets of staff. The outcome of phase one identified the need for a definition of knowledge management to engender some level of understanding, and strict guidelines in completing the questionnaire to ensure that evaluators can complete the questionnaire independently. There were no major changes to the Domains and Elements and structure of the generic framework, confirming that the cycle of development and improvement, with previous critical review had reached a reasonable point of saturation. The most important criticism in phase one of testing was the desire to categorise staff to achieve a balanced evaluation of the overall organisation, rather than taking an overview, or offering a cultural feel based on perceptions. This was considered and discussed further concluding that the framework is flexible enough to accommodate such an approach, and that participation should be cross organisational and/or 360 degree to meet the requirements of organisational triangulation as well as triangulation in the context of the overall research.

Triangulation was explored further, and drawing on Denzin 1978 (in Decrop, 1999), the four methods of triangulation were reconsidered against the development, critical reflection and improvement stage as well as testing of the framework, confirming that the requirements of method, investigator and data triangulation were met. The actual full application of a 'final' framework in a university setting, would require rounded participation therefore providing a robust and holistic view of the organisation's ability to engage with knowledge management

During phase two of testing, a focus group was presented with a broad definition of knowledge management and guidelines to complete the questionnaire, which included the fundamental 'rule' to maintain an overview of the organisation rather than considering categories of staff, and in doing so it was their feel for how the university generally functions in the context of knowledge management. This testing presented no major issues or difficulties in relation to the framework and process, and challenged individuals by requesting them to think in a different way from that to which they are accustomed. Overall the focus group felt that the generic framework was robust and capable of flexing to meet specific intervention requirements in a university.

The approach to analysis of information gathered about the University of Glamorgan was straightforwardly a presentation and evaluation of results, comparing the current situation with level of importance. This was not intended to be a comprehensive analysis of the university, but to establish that the framework was useable to a relevant conclusion. This did prove to be the case, however as with many exercises of this nature and through critical reflection further improvements can be considered. This is discussed further in chapter eight.

8. SOME CRITICAL REFLECTIONS

8.1 Introduction

This chapter provides a critical review of the process and outcomes of this research and is based on the view that contributions to knowledge have been provided within this thesis, and that the proposed framework offers universities a sound basis in which to review their readiness to engage in knowledge management. These statements are contended on the following bases:

- It is claimed that the proposed framework is innovative and offers contributions to knowledge because it is a new development within the domain of knowledge management. (it is intended to help evaluate the readiness of universities to engage in knowledge management);
- provides a new application of critical systems thinking (critical systems thinking is applied to knowledge management);
- uses a new synthesis (it was developed using a synthesis of soft systems principles, knowledge management concepts, and organisational theory);
- enables organisations to consider their situations in new ways (by enabling self-critique of KM readiness);
- offers new insights into the domain of knowledge management by means of the comprehensive and substantial literature review that helped its development.

Without an evaluation of Knowledge Management Readiness (KMR) the application of knowledge management frameworks and the implementation of knowledge management remain questionable. The framework has undergone a cycle of development, pragmatic and theoretical pluralistic critique, improvement. The KMR framework has been developed from theory and practice, and it has been demonstrated that it offers improvements over existing published frameworks. These improvements will be discussed further on in this chapter, not least by applying the same method of critical review to the proposed framework as was used for reviewing other published frameworks. Exposing the developing framework to pluralistic critique has helped

improve it in demonstrable ways, notably the addition of a critical dimension to the application of the framework in practice. This has been instrumental in creating a process that helps to empower organisations to evaluate themselves critically. This is not a feature of existing published frameworks.

Despite the successes that are claimed, it is not suggested that the process and outcomes of this research are perfect. This chapter provides a critical appraisal of both. Section 8.2 revisits the Generic Review Grid that was applied to knowledge management frameworks in chapter 5. This is in preparation for section 8.3 in which the same grid is applied to the proposed KMR framework. If the KMR framework offers the contended improvement over those reviewed it should have higher scores, and the reasons for those scores should be transparent and defensible. In 8.4 it is noted that the review of frameworks highlighted certain adverse outcomes. Therefore, in addition to scoring better than existing published frameworks, the proposed framework should be able to avoid or reduce the risk of such outcomes, and it is assessed in this light. In 8.5 the use of the framework in the University of Glamorgan case (Case 2) is discussed. The conclusions to this chapter are presented in 8.6.

It shall be mentioned here that, although not part of the development and critique of the framework itself as such, a critique of the thesis was provided at a mock viva held during OR46. The viva was held by Professor Steve Clarke (Director of Research, University of Hull Business School) and Ms Barbara Cargill (Dean Swinburne University Business School). Both had received written comments on the draft thesis from Professor Miles Nicholls (Director of Research, Swinburne University Business School), and Professor Krishna Dhir (Dean, Berry College Business School). The mock viva was attended by Professor Brian Lehaney. The meeting took one hour. A summary of the outcomes and the subsequent improvements is provided in Appendix 12.

8.2 The Generic Review Grid Revisited

A significant part of the research undertaken consisted of a review of published knowledge management frameworks (chapter 5). These frameworks were reviewed

using a generic review grid (table 8.2.1, repeated from 5.2 for convenience). For purposes of credibility, consistency, and to demonstrate critical evaluation, the framework developed during this research was exposed to the same kind of critical review. The approach taken is consistent with that used in chapter 5. Criteria for evaluation were developed pluralistically and were created to offer as consistent, systematic, transparent, and credible a review as possible. Detailed discussion of the generic review grid is detailed in 5.2.

In Table 8.2.1 each individual cell is scored according to the extent to which the requirements of the cells have been met. The score key is based on a simple 1-5 scale. A score of 1 shows that the specific cell is considered to be extremely poor in regard to the criteria indicated and a score of 5 shows that the specific cell fully meets the criteria. The highest possible overall score is 100, the lowest possible overall score is 20. Section 8.3 summarises the results of the review of this framework according to the four main headings in column one of table 8.2.1.

Table 8.2.1: Generic Review Grid for Knowledge Management Frameworks
(repeated here from 5.2 for convenience)

Score Key	1 = lowest possible score 5 = highest possible score				
Total Score 100	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	<i>Has the purpose of the framework been explicitly stated?</i>	<i>Has the purpose been discussed with clarity?</i>	<i>Is there reasoning to support the purpose of the framework?</i>	<i>Is there theoretical underpinning to support the purpose of the framework?</i>	<i>Is there empirical underpinning to support the purpose of the framework?</i>
Process	<i>Is the KM process explicitly stated?</i>	<i>Has the KM process been presented with clarity?</i>	<i>Is there reasoning to support the KM process?</i>	<i>Is there theoretical underpinning to support the KM process?</i>	<i>Is there empirical underpinning to support the KM process?</i>
Activities	<i>Are KM activities explicitly stated?</i>	<i>Have the KM activities been presented with clarity?</i>	<i>Is there reasoning to support the KM activities?</i>	<i>Is there theoretical underpinning to support the KM activities?</i>	<i>Is there empirical underpinning to support the KM activities?</i>
Develop & Test	<i>Is it explicit that development and testing has been undertaken?</i>	<i>Have the methods of development and testing been presented with clarity?</i>	<i>Have the methods of development and testing been reasoned?</i>	<i>Has development and testing been theoretically underpinned?</i>	<i>Has development and testing involved empirical evidence?</i>

8.3 The Proposed KMR Framework against the Generic Review Grid

8.3.1 Purpose

This is a systemic framework intended to evaluate a university's readiness to engage with knowledge management. The purpose is explicitly stated and discussion was undertaken with reasoning and clarity based on a sound review of knowledge management literature (chapter 4) and a critical review of current knowledge management frameworks (chapter 5) and other concepts were drawn from Soft Systems Methodology (Appendix 4). The framework was exposed continually to critique and this resulted in the recognition that critical dimensions could improve implementation. This resulted in the introduction and amalgamation (for the framework) of critical systems thinking (Ulrich 1983, 2003) and Skyrme and Amidon's (1997) six questions of investigation (which are specific to knowledge management). Organisational theory, in regard to structure, strategy and culture, was related to the different aspects of knowledge management. This helped to provide understanding about the overall framework, as did empirical work undertaken through case study research in the University of Luton. From the research, a holistic critically reflective dynamic framework was created with domains and elements, ordered into layers and underpinned by a process of critical evaluation.

8.3.2 Knowledge Management Process

The knowledge management process was explicitly referred to as Domains that represent key aspects of a university. These were chosen based on empirical work, exposure to critique and theoretical underpinning derived from Soft Systems Methodology, organisational theory and practice, critical systems thinking, and knowledge management concepts. Domain one represents a requirement for commitment from senior management and management generally who have the power and position to direct the organisation, whilst bearing in mind the strategic direction, environment and culture, and structure in Domain two. Domain three refers to strategy, internal environment and external environment. Domain four focuses on the people within the organisation who have the ability to implement knowledge management or obstruct it. Domain five

includes the overall organisational business processes, which reflect the organisational infrastructure and activities which are operational. Domain five, also contains technology, as the supporting tool to facilitate the organisational information system, and communication activities. The emphasis in the framework remains on people and the rationale for this is explicitly stated and reasoned.

The framework is illustrated in such a way that the dynamics of knowledge management can be easily understood for example the horizontal and vertical interaction of each Domain, all of which encompass the whole. A process of refinement was undertaken by reviewing the structure of the framework's Domains through critical reflection and reasoning, and empirical work based on feedback from external expertise to justify the inclusion, relocation or exclusion of Domains, all of which help instil confidence and understanding about this framework.

8.3.3 Knowledge Management Activities

Knowledge management activities are referred to as Elements that support corresponding Domains. The activities (Elements) were clearly identified within the structure and represent key activities or aspects of a university that may require exploration should the need arise, thus demonstrating the flexibility of the framework in a non prescriptive way, ensuring a practical tool for guidance. These elements were justified and reasoned, and underpinned by either theory and/or empirical work. This was an iterative process undertaken through internal critical reflection and exposure to external critique. All changes made both to the Domains and Elements were discussed and summarised, therefore ensuring understanding about each aspect of this framework.

8.3.4 Development and Testing

Development of the framework was undertaken through case study research in the University of Luton, literature review of knowledge management, research into current published knowledge management frameworks, exposure to critique and testing through empirical research at the University of Glamorgan. The methodology to conduct this

research and testing was made explicit and triangulation was used to help provide credibility. A development-critique-improvement cycle involved the foregoing in addition to conference papers, presentations, focus groups, interviews, workshops, supervisor's comments, and continual critical reflection based on the foregoing.

8.3.5 Results and Conclusions

The framework has undergone development, critical review and improvement resultant from previous research and as a distinct and separate exercise to maintain the integrity of the work, application and testing in the University of Glamorgan. The results and conclusions at each stage of development and final testing of the framework demonstrated that it is relevant, valid and effective with the capability to achieve its purpose. The formal design of the overall framework and critical evaluation criteria were logically reasoned in clear and understandable ways.

A major emphasis of the framework is on people, which has been derived from the supported view that knowledge resides with individuals who comprise the organisation. This approach however was not taken to the exclusion of other aspects of an organisation, and the framework reflects this through the Domains and Elements that show the holistic and dynamic interdependency of knowledge management.

The Domains and Elements within the framework were derived from empirical research and literature review and refined through critical reflection, reasoning, and feedback from external expertise to produce version one and version two of the framework. It was recognised that the Elements may not be exhaustive, because an organisation may identify additional Elements that require consideration according to their specific circumstances. All changes that were required as a result of feedback have been presented in this thesis and the justification made clear, therefore ensuring a critically reflective and transparent process of development.

The evaluation was designed to include critical reflection and this was achieved by combining Skyrme and Amidon's (1997) six questions of investigation which directly

explore the organisation in the context of knowledge management, and Ulrich's (1983) assessment criteria for intervention.

The emphasis on people remained constant and there was recognition of the need to consider roles, norms and values when undertaking a full analysis of the organisation, in addition to the idea that different levels of staff have some level of interdependence, but different perspectives. This highlighted the importance of flexibility in applying the framework and during testing, it was confirmed that the framework has the ability to achieve such flexibility.

Testing of the framework was undertaken in the University of Glamorgan in two phases using different sets of staff. There were no major changes to the Domains and Elements and structure of the generic framework, confirming that the cycle of development and improvement, with previous critical review had reached a point that could reasonably be considered as saturation. The most important aspect that arose during testing was the desire to categorise staff to achieve a balanced evaluation of the overall organisation, rather than taking an overview or offer a cultural feel based on perceptions. This was considered and discussed further in the thesis, concluding that the framework was flexible enough to accommodate such an approach, and that participation should be cross organisational and/or 360 degree to meet the requirements of organisational triangulation.

Feedback during testing indicated that there were no major issues or difficulties in relation to the framework and process, and those who participated felt challenged to think in a different way from that to which they are accustomed. Overall feedback confirmed the generic framework was robust and capable of flexing to meet specific intervention requirements in a university.

8.3.6 Summary

Overall this is a robust framework grounded in theory and empirical research. The theoretical base is a combination of Soft Systems Methodology and Critical Systems Thinking, allied with concepts of knowledge management. Knowledge management

processes (Domains) were explicitly stated, reasoned, empirically and theoretically underpinned. Knowledge management activities (Elements) were identified as activities or issues that a university would be guided to consider when evaluating its readiness to engage with knowledge management. The author recognised that these are not prescriptive but intended as a guide which can be added to for specific organisational requirements. Development and testing was undertaken using a clear methodology. The author has produced a holistic framework that provides a logical intervention, incorporating technology, business processes, people, the environment and culture, with respectful consideration for power and politics associated with knowledge sharing. The results are presented below:

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 100	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	5	5
Process	5	5	5	5	5
Activities	5	5	5	5	5
Develop & Test	5	5	5	5	5

Comparing the results of this review with the results of the review of frameworks in Chapter 5, table 8.3.1 shows the individual scores per framework, highlighting that this framework has achieved the highest score, level with Lee and Kim (2001) who used a combination of Resource Based Theory and Life Cycle Theory to underpin knowledge management and provided a well reasoned, empirically tested framework. Lee and Kim (2001) assume however that individuals within organisations will engage and commit to the concept of knowledge management. They do not consider the power and politics associated with people and knowledge sharing and offer no indication as to how this could be addressed.

Table 8.3.1: Individual Scores per Framework

	20 = lowest score 100 highest score	Purpose	Process	Activities	Develop & Test	Theory	Empirical
Abou-Zeid ES (2002)	66	17	17	17	15	4	6
Achterbergh J, Vriens D (2002)	82	23	20	22	17	17	12
Arora R (2002)	39	15	8	11	5	4	4
Balasubramanian P, Kumar N,	50	13	14	13	10	4	11
Bhatt GD (2002)	41	17	11	8	5	4	4
Binny D (2001)	39	17	12	5	5	4	7
Bolloju N, Khalifa M, Turban E	38	14	10	5	9	10	4
Bower WD, Heminger AR	45	15	13	5	12	4	10
Carneiro A (2001).	51	17	12	5	8	4	4
Connell C, Klein JH, Loebbecke C, Powell P (2001)	48	18	18	10	5	7	4
De Gooijer J (200)	48	19	12	7	10	8	10
Duru Ahanotu N (1998)	50	16	13	16	5	11	4
Escriba-Esteve A, Urra-Urbieta JA (2002)	60	20	20	5	15	13	4
Firestone JM (1999)	60	7	14	14	5	4	4
Gao F, Li M, Nakamori Y	43	13	13	12	5	10	4
Goh SC (2002)	37	16	11	5	5	6	4
Hatten KJ, Rosenthal SR	52	14	15	15	8	4	4
Hlupic V, Pouloudi A,	46	18	18	5	5	6	4
Holsapple CW, Joshi KD (2002)	92	21	22	24	25	12	20

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Hylton A (2002)	33	11	11	6	5		4	6
Jack G (2004)	100	25	25	25	25		20	20
Joshi KD (2001)	76	23	15	23	15		16	11
Kamara JM, Chimay JA,	54	18	14	12	10		4	10
Knight T, Howes T	75	20	21	15	19		5	20
Kwan M, Balasubramanian	79	21	21	16	21		4	20
Kwang KL, Pervaiz KA,	41	11	11	14	5		4	4
Lee JH, Kim YG (2001)	100	25	25	25	25		25	25
McAdam R, Reid R (2001)	47	15	12	5	15		4	4
Merali Y (2000).	47	13	15	5	14		7	9
Mullich J (2001)	20	5	5	5	5		4	4
Newman B, Conrad KW (2000)	44	15	9	15	5		4	4
Pérez Pérez M, Sánchez AM,	56	16	19	12	8		4	9
Pervaiz K, Kwang KL, Mohamed Z	34	10	9	10	5		4	4
Robertson S (2002)	30	8	6	8	8		4	7
Snowden D (@ 1998)	50	15	15	15	5		4	4
Zack MH (1999)	42	10	13	9	10		4	6

Whilst many frameworks do already exist, this review of those that are published concluded that overall existing frameworks have some or all of a number of weaknesses. These are summarised here.

Existing frameworks are:

- based on the assumption that all organisations are ready to engage in knowledge management,
- not designed or able to evaluate the readiness of an organisation to engage in knowledge management;
- purely aspirational;
- not founded in theory;
- not grounded in practice;
- unable to demonstrate empirical research in their development;
- not developed critically;
- untested;
- not reflected upon critically by their owners;
- lacking any explicit approach or content to empower participants to view their own organisation critically;
- not holistic;
- purely technically focussed;
- too prescriptive, with no explicit means to achieve adaptability to context;
- fine at a very broad strategic level but with no means to link this to operations and tactics;
- detailed to the extent that the operational/tactical level appears to be the limit of knowledge management.

As demonstrated in this research, the creation of the framework presented in this thesis involved a development-critique-improvement cycle that used both theory and practice. This cycle used literature (theories, methodologies, practices); exploratory investigations (Case 1 University of Luton); a substantial review of KM frameworks;

triangulation of critique using feedback from conference papers, presentations, focus groups, interviews, workshops, supervisor's comments; continual critical reflection based on the above and testing (University of Glamorgan – Case 2). This process helped produce a framework that is transparent, that is justified explicitly and clearly by theory and/or empirical research, and that addresses all of the issues of concern noted in the preceding bullet points. These issues and how these are addressed are discussed next.

8.4 Issues of Concern and How these are Addressed

8.4.1 Purpose

Why is this Important?

Many of the frameworks reviewed in chapter 7 appear to have no clear or explicit purpose. Without such clarity the end user is left to utilise the framework in a particular organisational setting, but may be using a tool that is totally inappropriate for the work required. Many universities may be tempted by such 'solutions' only to find that the package or methodology chosen may be inappropriate for their purpose. Time spent ascertaining the purpose first and establishing the readiness of the university to engage with the solution prior to implementation is likely to result in greater success.

How is this Addressed?

The framework outlined here has one clear and explicit purpose: to evaluate critically a university's readiness to engage in knowledge management. This purpose emerged from initial research that involved reviewing literature (theory, practice, and methodology), a pilot case, and interviews with individuals at both private and public sector organisations. Two common themes appeared in regard to new organisational ventures: 'Why are we doing this?' and 'Are we really ready to do this?' Whilst the postulated framework is designed to address the latter question it cannot do so without addressing the former. Indeed, if the answer to the former question is 'Don't know', the answer to the latter is 'No!' Knowing the answer to the first question is a necessary but not sufficient condition to obtaining a positive response to the second.

8.4.2 Readiness

Why is this Important?

The assumption that all organisations are ready to engage in knowledge management may be dangerous. It could lead to wasteful misuse of resources by addressing the wrong problems. Without considering what is really needed in the first place, staff may feel that this is yet another imposed project or fad that has nothing to do with their 'core' activities. Even with full and willing participation, failure to address the underlying issues, such as assuming that the culture is in place to engage in knowledge management, may result in problems emerging in the future.

How is this Addressed?

The Knowledge Management Readiness (KMR) framework has layers, domains, and elements, all of which are designed to help evaluate an organisation's readiness to engage in knowledge management. It does this by using a process of critical triangulation and participation, and by creating a situation in which different participants ask themselves a number of different questions about their organisation, by means of focus groups, interviews, and questionnaires. In addition, the researcher's observations add to the process of triangulation.

8.4.3 Aspirations and Theory

Why is this Important?

Frameworks that are purely aspirational offer no guidance as to how to achieve outcomes. Frameworks that do not have explicit theory bases *do* have bases in theory and these are just not made explicit – but they *do* have bases in theory. If the theory is not grasped, it is difficult to implement something with full conviction. It is also extremely difficult to address issues when things go wrong or off-track (as they invariably will) if the basis of what is being done is not understood. Thus, it may be apparent that the framework offered is not presented as an 'off the shelf' solution. It requires a skilled and

knowledgeable facilitator – in the first instance. However, it is designed to help empower, rather than to retain dependency based on expertise.

How is this Addressed?

The KMR framework makes its purpose explicit and makes explicit how it may be used. The underlying theories are spelt out and the reasons for their selection are made clear. Every aspect of the framework is justified explicitly in this way, and theory is continually linked to practice.

However, the framework draws extensively on Ulrich (1983) and Skyrme and Amidon (1997), and uses six questions of investigation based on these. In essence these are concerned with asking the right questions to identify what currently happens, and explore what ought to happen to engage successfully with knowledge management. This helps expose explicitly the contradictions in the organisation regarding the current situation versus importance, thus empowering critical self-reflection. This is discussed in more detail in the section on critical development.

8.4.4 Practice and Empirical Research

Why is this Important?

Frameworks that are based purely on theory miss the realities of application in the context of an organisation. Attempting to apply such frameworks may be troublesome at least. Interpreting what is meant in concept in the applied arena effectively means helping develop the framework. This could lead to resentment, lack of conviction, and eventually failure.

How is this Addressed?

The KMR framework addresses this by drawing on a mix of best practice, ideal practice, and empirical study, and relating these to theory. Ascertaining best practice involved using focus groups, case work, interviews, workshops, and a review of existing frameworks. Many frameworks stop at best practice, but for this framework, participants

were asked to air their thoughts on ideal practice (as well as best practice) and these have been incorporated where practicable. In other words, they were not only asked their views as to what is the best of what exists but were also asked their views as to what is important and therefore what *ought to exist*.

8.4.5 Critical Development, Testing, Critical Reflection, and Critical Empowerment

Why is this Important?

Frameworks that do not go through a development-critique-improvement cycle may be developed in a naïve and unthinking fashion and can be used to bolster predetermined views. Such self-fulfilling prophecies can arise for example when the same people that develop a framework critique it. It can be very tempting to seek solely supporting evidence rather than to seek negative evidence. Ignoring this can have serious implications for practice when a framework is found not to be robust.

An example of failure caused by taking the wrong approach is the London Ambulance case. At first considered to be a technical failure, the subsequent investigation revealed that senior management had taken the non-critical self-supporting approach that has been criticised here. In this case, not only did they not seek negative evidence to test the robustness of their proposed framework, but they also steadfastly refused to listen to any counter evidence presented to them. Only by building in explicitly a critical theme can it be possible to avoid such errors other than by pure chance. Of course a critical theme provides the means but does not guarantee implementation. In other words it is a necessary but not sufficient condition. However, if it is built in explicitly and transparently, ignoring it or its outcomes would have to be explicit and transparent, and could not be done accidentally because no one was aware that it should be done.

How is this Addressed?

The KMR framework was produced using a development-critique-improvement cycle throughout. Ideas were taken from literature (theory, practice, methodology) and empirical research, formulated as drafts, and exposed to critique in various ways. This included conference papers, presentations, focus groups, interviews, workshops, and comments from peer researchers and practitioners. Together these formed a triangulation of critique that helped create convergence of purpose and design. The framework went through numerous iterations as a result, until such point that the issues raised by the critique were addressed satisfactorily, or it became apparent that they were beyond the scope of this framework to address. For example, a valid comment was that this framework might expose weaknesses in an organisation's readiness to address knowledge management, but if senior management does not want to do anything about it nothing will happen. This framework does not purport to address that issue, and any framework must have boundaries. In fact, of those reviewed, the worst cases were frameworks that appeared to offer all solutions to all organisations in all contexts. The KMR framework provides help to empower organisations to examine themselves critically and expose such weaknesses, but it can only *help* – in itself it cannot provide solutions and it is not suggested that it can. Thus, whilst this critique is valid, it is not within the scope of this framework to address.

Once the conceptual framework was considered ready, it was tested in a 'live' setting at the University of Glamorgan. This testing had two main objectives. The first was to ensure that the framework really worked on a top-down basis and when 'drilling down' occurred from the strategic, through the operational, to the tactical levels, the framework really was applicable and robust. The second was to test if the desired balance of keeping all of the carefully developed framework concepts whilst adapting to organisational context could be achieved.

The framework was applied successfully but not without major learning occurring on the part of the facilitator. The levels of self-interest and hidden agendas on the part of respondents resulted in strong attempts to divert the exercise and discredit the framework. These attempts were only resisted because of the prior critical development that gave

strong belief in the framework's quality. In addition, whilst genuine criticism was welcome, the diversionary tactics became obvious, and hidden agendas exposed. The impression should not be given that all participants were negative, as many participated openly and freely. In some ways it might be argued that the framework was less useful in such cases. However, that may be argued about any approach, and it may be reasonably suggested that in an environment of total trust, complete co-operation, perfect communication, and 'ideal speech', a framework of any kind would be unnecessary. In an organisation that has yet to achieve such ideals, a major achievement of the framework was the confidence it instilled to help recognise diversionary and delaying tactics born out of self-interest. At the risk of repetition, this was only possible to understand and resist because of the knowledge that the framework had gone through a rigorous process of critique, and because that knowledge prepared the researcher for criticisms that had already been addressed. By coincidence, this acted as a means of corroborating triangulation in regard to critical saturation. Before the framework was applied 'live' the point had been reached where convergence of criticism was achieved and addressed. Thus, in the 'live' case no new criticisms emerged, and those criticisms that did emerge were 'empty' as they had already been addressed satisfactorily.

One major criticism that is made by the researcher, but is beyond the scope of this framework to address is that whilst a good quality framework may assist, it does not make a good quality facilitator. Both aspects are important, and whilst the framework played a major part in the case, the experience, skills, and knowledge of the researcher/facilitator played an important role. If an inexperienced researcher attempted to apply this framework the diversionary tactics may easily have succeeded. Thus, it should be reiterated that the framework is not stand-alone. It requires consultancy or facilitation in the first instance. It enables critical review and if an organisation accepts and understands the initial outcomes, they may then choose to address those by using the framework. In short, a critical framework requires *critical facilitation* or the application of the framework may not be critical in reality. This empowerment of critical reflection is built in to the KMR framework clearly, deliberately, and explicitly, rather than being left to chance.

8.4.6 Holism, Technical Focus, Prescription, Detail vs. Strategy

Why is this Important?

The issue of holism provides context from the perspective that a systemic approach helps avoid reducing problems to solvable units that really bear no relation to the overall situation being addressed. This links to the presentation of KM as being purely technically focussed. Such a focus assumes that if only the correct information technology is in place, a KM system will also be in place. It does not recognise a world that comprises human activity systems and therefore ignores political and social factors. This purely technical focus may produce IT systems that may be valuable, but without a more holistic framework to address other important issues, there is no understanding as to how such systems would be introduced or implemented in an organisation. Similarly, frameworks that focus at a purely operational level omit major aspects of introduction and implementation. Finally, frameworks that are prescriptive appear to assume that one approach will work for all organisational contexts. This is uncritical and therefore undesirable for reasons discussed previously.

How is this Addressed?

The KMR framework has a basis in strategy and operations, and KM is centred at the convergence of people, processes, technology and environment. The framework is layered so that strategy is considered explicitly and the move from strategy to operational level is also explicit. It is not possible in advance to prescribe what should happen at a tactical level. This depends on organisational contexts. It appears to be sometimes assumed that tactical is something that only occurs after strategy and operations. In implementing the KMR framework the stages are interwoven in some ways. That is because the framework is flexible and even at the strategic level allows for a variety of approaches. For example, in trying to evaluate senior management understanding and commitment, individual interviews may be used to ascertain views of the current position of the organisation's KM readiness versus the importance of KM readiness. This was the approach used in Case Two (discussed further on), but it is by no means the only approach available. The juxtaposition of current/importance can be considered by,

amongst others, focus groups, observation, and by self-administered questionnaires. Indeed, it would be advantageous to try to use as many approaches as possible, with as many levels of staff as possible, as this would create triangulation. However, the organisation will have views about what is feasible and desirable, and it will have limited resources. Thus the desire to triangulate must be tempered by the reality of the organisation's core activities – bearing in mind that the process of critical reflection has yet to start. One aspect that is key is the consideration of current situation of KM readiness versus its importance. If an organisation will not engage in this exercise in any form whatsoever, then there is no point in taking the exercise further. The KMR framework is useful for those who want to examine their own organisation critically, but it starts with the initial premise that without senior management commitment being demonstrated (rather than just stated) there are probably ulterior motives for a firm engaging in this evaluation. One way that such commitment can be demonstrated in the initial phases is by showing that the issue of KM readiness is taken seriously and by participating fully in the current/importance evaluation.

8.5 Critique of the Application of the Generic Review Grid to Case 2

8.5.1 The Framework Applied

Once the KMR conceptual framework had been developed as fully as reasonably possible (saturation), it was applied to a testing case, and exposed to challenge and critique once more, but this time from a different perspective. By this stage the framework had undergone critical pluralistic review from both theoretical and applied bases. The conceptual framework was in accord with critical systems thinking and it incorporated some major KM concepts. The evaluation process was developed with a clear knowledge management investigative procedure based on Skyrme and Amidon's (1993) six questions of investigation, and allied to Ulrich's (1983) assessment criteria for intervention. In undertaking the research much was drawn from Denzin (1978) in regard to triangulation.

Case Two, its process, and its outcomes have been discussed extensively previously, so only a summary will be provided here. Case Two was undertaken at the University of Glamorgan, which had stated a significant interest in knowledge management. A first challenge for the university was that the senior management's understanding of KM was very much as a computer system rather than knowledge management. They were surprised at KM being presented as a more encompassing domain. The strength of the knowledge that the framework had this, and with hidden agendas and diversionary tactics, these were easily exposed because the framework was robust and not easily open to challenge. For example, when some participants failed to challenge the framework itself, they attempted to divert the purpose (to evaluate the organisation's readiness for KM). The diversions usually involved personalities or inter-departmental (or even intra-departmental) tensions. It also became apparent that some participants may want try to focus on existing structures and categories, and may, for example, find it difficult or unsuited to their agendas to discuss issues generally without categorising staff by status and role.

The foregoing alone suggests that the organisation needs to consider some major issues before engaging in knowledge management. It may of course be argued that the exercise of airing and addressing the issues may itself be one of knowledge management, and that will not be disputed here. However, in order to do that, the iterative process has to begin somewhere, and the KMR framework acts as an enabler for that. The case resulted in some adaptation to the framework's process to suit the organisational context, but no change to the overall generic KMR framework was needed. This helped to support the view that saturation had been reached.

Whilst the framework is capable of adapting without altering the generic structure, the previous discussion raises the issue of the capability and style of the investigator/facilitator, and how much this influences the investigation. Both Soft Systems Methodology and critical systems thinking fail to address this issue in any depth, but it would be very naïve to suggest that the KMR framework could be applied by any person in any context. It requires a skilled facilitator and it requires some understanding of its bases. This may make it appear weaker than frameworks that are claimed to be

applicable by non-experts in a variety of contexts, but the value of such claims is open to question.

During the application of the framework at the University of Glamorgan, despite the issues of concern mentioned, and provided that participants engaged, the framework forced critical self-reflection. This raises a further criticism in that the framework, being reliant on practice that considers knowledge management to be within the human activity system tradition, can be undertaken without such engagement. Indeed, similar criticism can be levied at any methodology that relies on debate. The politics and power issues surrounding this are beyond the scope of this thesis, but nevertheless are areas of interest for future research.

Overall, it is contended that the application of the KMR framework to Case two was successful, and justified the view that saturation had been reached and that little more could be gained from further testing. The Case Two scores indicated that improvements could be made at the University of Glamorgan in relation to Knowledge Management Readiness, and the framework helped highlight graphically the juxtaposition of the current situation against the importance of knowledge management to the university. Overall the framework worked very well and was flexible enough to meet a new context (University of Glamorgan had not been used in development).

8.6 Conclusions

This chapter provided a critical review of the process and outcomes of this research, highlighting why a new knowledge management framework is needed, followed by discussion of major areas of weakness found in the review of knowledge management frameworks, and how this framework addresses them. The new framework for knowledge management readiness underwent a development, critique and improvement cycle resulting in a robust framework grounded in theory and empirical research. The theoretical base is a combination of Soft Systems Methodology and Critical Systems Thinking, allied with concepts of knowledge.

The review of published knowledge management frameworks (chapter 5) provided a significant part of the research undertaken, and this was conducted using a generic review grid. The same approach and grid was used to review the framework for knowledge management readiness showing a score of 100, the highest score that can be achieved.

Only one other framework reviewed scored similarly, however this framework had a weakness in that they assumed that individuals within organisations would engage and commit to the concept of knowledge management, without considering the power and politics associated with people and knowledge sharing and offered no indication as to how this could be addressed. Nor did their framework have any element that would consider the readiness of an organisation to engage with the concept of knowledge management. In contrast, this framework explicitly considered such issues. In addition several other important issues were considered with discussion and reasoning as to their importance and how this framework addresses these issues, providing contributions to knowledge. The issues that arose are: purpose; readiness; aspirations and theory; practice and empirical research; critical development, testing, reflection and empowerment; holism, technical focus, prescription, detail vs. strategy; and application.

With regard to purpose, many of the frameworks reviewed in chapter 5 appeared to have no clear or explicit purpose and without such clarity there is confusion. The framework for KMR has one clear and explicit purpose: to evaluate critically a university's readiness to engage in knowledge management and this was underpinned by research that involved reviewing literature (theory, practice, and methodology), a pilot case, and interviews with individuals at both private and public sector organisations.

Readiness was considered as important because the assumption appeared to be that all organisations are ready to engage in knowledge management, which can lead to wasteful misuse of resources and emerging problems in the future. The KMR framework is designed and structured to help evaluate an organisation's readiness to engage in knowledge management, using a process of critical triangulation and participation. Again this is underpinned by theory and empirical research and testing.

Aspirations and theory is important because frameworks that are purely aspirational offer no guidance as to how to achieve outcomes. Frameworks that do not have explicit theory bases *do* have bases in theory and these are just not made explicit – but they *do* have bases in theory. If the theory is not recognised and understood, it is difficult to implement something with full conviction. The underlying theories for the KMR framework were spelt out and the reasons for their selection were made clear. Every aspect of the framework was justified explicitly in this way, and theory was continually linked to practice.

With regard to practice and empirical research, frameworks that are based purely on theory are weak in reality and interpreting what is meant in concept in the applied arena effectively means helping develop the framework. The KMR framework drew on a mix of best practice, ideal practice, and empirical study, and these were related to theory. Ascertaining best practice involved using focus groups, case work, interviews, workshops, and a review of existing frameworks.

Critical development, testing, critical reflection, and critical empowerment provide perhaps the greatest contribution to knowledge. Frameworks that do not go through a development-critique-improvement cycle have not engaged with robust critical reflection, which should be negative as well as positive. It is important to seek negative evidence to test the robustness of a proposed framework in an explicit and transparent way. The KMR framework was produced using a development-critique-improvement cycle throughout, in a multi-methodological manner which formed a triangulation of critique that helped create convergence of purpose, design and boundaries. Boundaries included, for example management commitment, or action to undertake a particular recommendation. This framework is intended to help expose weaknesses for consideration and understanding, it is not intended to provide answers. In order to expose weaknesses and achieve a level of accountability within the organisation, a critical element to evaluation was applied using knowledge management investigative questions. This approach however still does not result in answers about action and senior management commitment. Whilst this critique is reasonable and valid, it is not within the scope of this research to find the solution.

Once the conceptual framework was considered ready, it was tested in a 'live' setting at the University of Glamorgan. The framework was applied successfully and resulted in further learning on the part of the facilitator. The learning experienced related directly to organisational behaviour and attitude based on self-interest and hidden agendas on the part of respondents. These attempts were exposed and resisted because of the prior critical development that gave strong belief in the framework's quality. Before the framework was applied 'live' the point had been reached where convergence of criticism was achieved and addressed. Thus, in the 'live' case no new criticisms emerged, and those criticisms that did emerge were 'empty' as they had already been addressed satisfactorily.

One major criticism that is made by the researcher, but is beyond the scope of this framework to address is that whilst a good quality framework may assist, it does not make a good quality facilitator. Both aspects are important, and whilst the framework played a major part in the case, the experience, skills, and knowledge of the researcher/facilitator played an important role. If an inexperienced researcher attempted to apply this framework the diversionary tactics may easily have succeeded. This confirmed that the framework is not stand-alone but requires critical facilitation in the first instance, whilst maintaining the holistic non-prescriptive approach.

Holism, technical focus, prescription, detail vs. strategy provides context from the perspective that a systemic approach helps avoid reducing problems to solvable units that really bear no relation to the overall situation being addressed. The KMR framework has a basis in strategy and operations, and KM is centred at the convergence of people, processes, technology and environment. The framework is layered and interlinked so that strategy is considered explicitly and the move from strategy to operational level is also explicit. The holistic approach is as much about consideration of all aspects of the organisation as it is about full participation through focus groups, observation, and by self-administered questionnaires with as many levels of staff as possible, as this would create triangulation. However, this must be tempered with the organisation's view about what is feasible and desirable, and it will have limited resources.

In applying the framework, time did appear to be an issue, though overall feedback indicated that it was considered robust and capable of flexing to meet specific intervention requirements in this and similar organisations. As indicated the framework was robust and not easily open to challenge. The types of challenges to emerge indicated tensions that in themselves would be issues for the university to address before engaging with knowledge management and the KMR framework would act as an enabler to initiate progression in this respect.

In addition to the foregoing, the mock viva held at OR46 (see Appendix 12) was of major help in improving the thesis and formed part of the critique process.

9. CONCLUSIONS

9.1 Summary

In the foregoing chapters it has been argued that contributions to knowledge have arisen from the research presented in this thesis, and that the 'final framework' offers universities a sound basis on which to review their readiness to engage in knowledge management. The term 'final framework' is used here to indicate that the status of the framework and the associated research are considered sufficient to demonstrate contributions to knowledge. It is not suggested that no further research could be conducted or that the framework could not be improved. It is 'final' in the sense that it is believed fit for purpose in regard to this thesis.

In the previous chapter it was claimed that the proposed framework is innovative and offers contributions to knowledge because it:

- is a new development within the domain of knowledge management (it is intended to help evaluate the readiness of universities to engage in knowledge management). Research demonstrated that whilst there are frameworks that can support the implementation of knowledge management, there are none that will assist universities in evaluating their current state of readiness to engage with the concept. This framework offers guidance to assist universities in such an evaluation;
- provides a new application of critical systems thinking (critical systems thinking is applied to knowledge management). Through a comprehensive review of knowledge management frameworks, it was established that many are descriptive and/or prescriptive and not underpinned by theory. This framework uses critical systems thinking to underpin and guide the process of self evaluation;
- uses a new synthesis (it was developed using a synthesis of soft systems principles, knowledge management concepts, and organisational theory). This framework provides a holistic approach, drawing on and cross referencing theory relevant to underpinning the dynamism of organisational knowledge management ;

- enables organisations to consider their situations in new ways (by enabling self-critique of KM readiness). In the process of self evaluation, evaluators must consider what currently happens, which is considered against what they view as important to the organisation rather than personal agendas, therefore guiding participants to consider their situations in a holistic manner;
- offers new insights into the domain of knowledge management by means of the comprehensive and substantial literature review that helped its development. This was achieved through reasoned discussion and consideration of knowledge management literature generally, and a comprehensive review of knowledge management frameworks.

The process and outcomes of the research were considered critically in the previous chapter. The research was undertaken using pluralistic critique throughout. The proposed knowledge management readiness (KMR) framework was created by means of a development-critique-improvement cycle that is grounded in theory and empirical research. Soft Systems Methodology, critical systems thinking, and organisational theory have been allied with knowledge management concepts to produce the KMR framework.

The same approach and grid that was used to produce the review of published knowledge management frameworks in chapter 5 was used to review the proposed KMR framework. The latter scored highly and the scores are reasoned and defensible. The developed conceptual framework was successfully applied at the University of Glamorgan.

In undertaking the research it became clear that there is no single definition of knowledge management or what constitutes a knowledge management framework. The following working definition of knowledge management was derived from theory, practice and reasoning and provided the context within which this research was undertaken:

Knowledge management refers to the systematic organisation, planning, scheduling, monitoring, and deployment of people, processes, technology, and environment, with appropriate targets and feedback mechanisms, under the control of a public or

private sector concern, and undertaken by such a concern, to facilitate explicitly and specifically the creation, retention, sharing, identification, acquisition, utilisation, and measurement of information and new ideas, in order to achieve strategic aims, such as improved competitiveness or improved performance, subject to financial, legal, resource, political, technical, cultural, and societal constraints.

Although complex, this definition reflects the dynamism of organisational knowledge management, maintaining the concept at a broad organisational level, both strategic and operational. Further, this research demonstrated that there are many concepts that are common to multiple frameworks but the structure of the frameworks varies. Given that knowledge management frameworks are so variable, too focussed, prescriptive, not tested or underpinned by relevant theory, it is important that a framework specifically designed to evaluate the KMR of an organisation has been developed. Such a framework could be generic, but the final framework that one organisation may use in applying knowledge management may differ from another because cultures procedures and practices etc are different.

9.2 Achieving the Aim and Objectives

9.2.1 Aim

The aim of this research was:

to develop a useful framework, based on theory and practice, which is designed to help evaluate a university's readiness to engage with knowledge management in a holistic way, and which would provide useable decision-making inputs that are understandable to managers.

The previous section has argued (in effect) that this aim has been achieved. The following discussion concerns the achievement of the objectives.

9.2.2 Objectives

Provide a critical review of the knowledge management literature.

A comprehensive review of the knowledge management literature has been provided in Chapter 4. Chapter 4 explored various aspects of knowledge management, establishing that business success, the new era of organisational forms and the continual changing environment require new approaches to management. Knowledge management has been argued to be essential to capture and maximise the knowledge and expertise that provides an organisation with competitive edge.

Communication is regarded as key to knowledge management and whilst improving technologies provide opportunities for increasing information exchange, much organisational knowledge is tacit, and can not so easily be transferred electronically. This research therefore focused heavily on the human dimension, placing electronic information exchange in the position of facilitative tool and placing more emphasis on the dialectic and critical process. The critical discursive process distinguishes information exchange from knowledge sharing because the emphasis shifts from non-action to learning, understanding and consideration of variable solutions, which can impact horizontally and vertically throughout the organisation and require competent management of interrelationships.

The relationship between managing knowledge and people was recognised and discussed because knowledge is still associated with power, money and organisational politics. Management challenges, therefore, are changing in relation to teamwork, organisational structure, communication and collaboration and ability of the organisation to learn. This research explored the foregoing issues further from a holistic critical perspective.

The literature review in chapter 4, however, did not indicate any holistic underpinning theory as such and did not recognise the need for knowledge management to be treated as a strategic issue. Appendix 3 therefore explored the development of management in relation to theory and issues that should be considered in relation to knowledge management. Strategic approaches to organisational management and

structures were discussed. One significant observation was the connection between structure and management approaches that influence the culture of organisations and can either make for a viable environment for effective knowledge management or result in obstructions, but solutions can be found to such obstructions through the generation of an appropriate culture and management approach.

It was established that the initial design and development of organisational structures is based around functionality and a role culture, whether it is stringently centralised or loosely devolved. Although it appears that structures are diminishing at a time of increasing technology and virtual working, the overall management and control issues remain constant. Whilst this is relevant from a generic perspective, it was recognised that universities have been considered to be different from other organisations, public and private sector, being described as loosely coupled systems (appendix 3). They serve customers who insist on involvement in the decision-making processes (e.g. the student community) and comprise professional employees who demand a large measure of control over institutional decision processes (e.g. independent thinkers such as the academic community).

Universities also remain vulnerable to external political, economic, and demographic pressures that make internal decision making difficult, but they are equally vulnerable to external Governmental demands that drive institutions toward greater accountability, monitoring, control and value for money. Given this discussion, it was important to develop a framework with due regard and understanding of general structures, cultures, and management that can evaluate the readiness to undertake knowledge management of a university that is progressively moving toward a more centrally controlled purposeful organisation form. The point was emphasised that in an increasingly competitive environment that is resource poor, loosely coupled organisational forms are luxuries that universities can ill afford because of the likely wasted resources.

Discussion and reasoning continued concluding that the attitude of managers in addition to an explicit awareness and understanding of the culture and structure helps to consider the evaluation of an organisation's readiness to engage with the concept of knowledge management, specifically the need to shift toward more strategic

management thinking linked to operational, and to include personal experiences and learning, organisational, social, behavioural and cultural influences, within the scope of human resource management, as well as the relevant business processes and technological tools to facilitate it.

Discussion continued leading to a systems perspective of the organisation, which demonstrated that whatever the approach or structure, ultimately an organisation is a system which brings large or smaller groups of people together to achieve a common goal. The systems perspective also underpins the need to consider current changes in organisations as different sectors move toward disparate or virtual working environments as indicated, and collaborative knowledge based services rather than products. The appropriateness and benefits of using Soft Systems Methodology (SSM) to explore and develop a framework was confirmed.

Evaluate management practices in relation to knowledge management within a case organisation.

This was achieved and chapter 3 presented the initial case study based on the University of Luton. This initial phase of research provided understanding about a university's key issues and challenges that would need to be considered if the university were to consider developing an approach to knowledge management. The main issues to emerge related primarily to organisational communication, interaction and relationships with management, participation in decision-making, empowerment, training and development, change management, motivation and innovation. Communication emerged consistently throughout the research and communication is core to the success of knowledge management. This highlighted the need for improved communication systems and technology which needed to be implemented in a balanced way.

The university was striving for improvement and had positive intentions to address the university's culture to generate cross-organisational interaction, knowledge sharing and working practices. It was clear that although there was an interest in knowledge management, for example through the appointment of a cross organisational facilitator and developer, and there were organisational issues that

needed to be addressed before reasonable engagement with knowledge management could be achieved. These included interrelations between staff and management, internal and external partnerships with other universities, employers, funding and professional bodies and community organisations. Within the area of interrelations were value and recognition, motivation, feedback on performance, empowerment and authority, participation in decision making and consultation. Over all, staff in the University of Luton cited a creative and dynamic environment as being one they would prefer to work within.

Review current knowledge management frameworks and develop knowledge management best practice criteria

This was achieved and chapter 5 provided a comprehensive review of published knowledge management frameworks intended to offer methods and approaches for the implementation of knowledge management, or aspects of it, such as knowledge creation, or knowledge sharing. The results of this review demonstrated that despite the need to consider people, culture, and associated aspects of the organisation, the majority of publications and products are still focussed on technology and hard based information systems. Few frameworks considered a holistic, strategic approach to knowledge management and of those that were relevant, a nominal amount considered the readiness of an organisation, making assumptions about staff's willingness and ability to engage. The results also revealed major weaknesses in theoretical underpinning and empirical work, making the majority of the published frameworks aspirational and inadequate to the needs of practitioners. As a consequence the frameworks did not adequately consider all aspects to effectively implement knowledge management in a sustainable way.

The review of frameworks confirmed again the need to develop a framework that is based both in theory and practice and considered the management and human capability as a significant element in the knowledge management process. The kind of framework produced here is at a strategic level.

Establish a theoretical and practical foundation on which a framework for evaluating the readiness of a higher education institution to engage with knowledge management can be based.

This was achieved and in doing so, addressed the main criticisms of previous frameworks, i.e. the lack of empirical and theoretical underpinning. This conceptual framework is underpinned by theory, empirical work, critical reflection and reasoning undertaken throughout the research and demonstrates a significant contribution to knowledge. Empirical work derived from case study research undertaken in the University of Luton and exposure to critique through seminars, conferences, peer review and discussion, and separate independent testing with practitioners. Theory is referred to in various contexts resulting in a pluralistic theoretical underpinning based on management theory, structure, culture, learning theory, communication, critical thinking and Soft Systems Methodology.

Soft Systems Methodology (SSM) demonstrated the depth of theoretical and methodological underpinning that a knowledge management framework can gain from SSM in terms of development. The research focused on human situations in a university in the context of knowledge management and as such was faced with social complexity, ill structured and strategic problem situations, therefore requiring a logical approach to the investigation and intervention by way of a framework to evaluate a university's readiness to engage with knowledge management.

Emphasis was placed on the analyst to ensure appropriate participation and maintain the ethos of SSM, which could have been viewed as a weakness, because it reduces the level of independence that a final framework may offer to the practitioner, however, this is a surmountable challenge that requires critical facilitation training.

The principles of SSM were useful to recognise the complexity of social systems including the challenge of the participant investigator to focus on outcomes based on learning to improve, holistic systems thinking, relationship handling and an action research paradigm. The holistic systems thinking identifies the component parts that may be meaningful to one level of a hierarchical system, but combined, they contribute to the overall system and the dynamics within. In this sense the adaptation

of SSM to underpin a framework for critical evaluation of a university provided robustness. This was very relevant in relation to the potential for many influencing variables drawn from the initial case work in the University of Luton and review of knowledge management literature. From this discussion, it was possible to establish a potential structure for a knowledge management framework. However as the framework underwent the development – critique – improvement cycle, it was recognised that Soft Systems Methodology is not critical but based on consensus and compromise rather than radical improvement or change. The critical dimension was applied by the author during development. To critically evaluate an organisation, a knowledge based evaluation matrix was introduced in chapter 6, but the evaluation matrix was limited to the extent that it would only guide the actual questions to be asked in the context of knowledge management, and not necessarily evaluate the organisation's readiness from a robust critical perspective.

Further discussion on critical research in this context concluded that the critical element was essential both to distinguish this research from other work, in that the framework is non-prescriptive and the critical discursive process is what distinguishes information exchange from knowledge sharing because the emphasis shifts from non-action or simple problem solving to a position of learning. All of this needed to be considered within the scope of power and politics in the organisation, not necessarily to establish a situation of equality and emancipation as this is unsustainable, if ever achievable, but to provide opportunities for broad discourse situations based on critical awareness and reflection with the recognition of power bases and influences. The result of this reasoning was in keeping with the systems paradigm, the framework and process of evaluation remained underpinned by SSM, and reflected a social planning approach in an organisational context. But extending this and drawing on critical systems thinking, the evaluation technique was designed for critical reflection allowing for those who would be undertaking an organisational evaluation to critically reflect during the process of evaluation and in essence the framework and approach provided a tool to guide this process.

In applying this process for critical reflection, chapter 6 provides discussion and reasoning in the development of the evaluation matrix. This was based on the need to be able to ask the right questions to identify what currently happens, and explore with

the organisation what ought to happen to engage successfully with knowledge management, whilst bearing in mind the need for appropriate participation. However, it was felt that just using an “ought to” happen question did not push individuals to think organisationally, so the “ought to” question formed the basis of what was considered important to the organisation. In applying this criterion, therefore the distinction between what currently happens in the organisation reflected the “is” scenario and what was considered to be important to the organisation reflected the “ought” to happen.

By guiding the organisation to question what happened assisted in the explicit recognition of current “knowledge management” practices, and by juxtaposing the difference between where the organisation is on to what they consider to be important identified what needed to be explored further.

Evaluate and revise the conceptual model

This was achieved throughout using a development – critique – improvement cycle. Chapter 6 however, brought together previous research and learning, and focused specifically on the conceptual framework version one, which included the approach to evaluation. All changes to the framework were identified and incorporated into a revised framework version two, with 23 changes made in total. The revised framework version two was presented, with full justification for the inclusion of all elements, all of which were theoretically and/or empirically underpinned. The importance of critical reflection in preparation for application was emphasised and the evaluation technique was designed for critical reflection.

Utilise the revised model in a higher education institution.

This was achieved and chapter 7 discussed the application and testing of the framework in the University of Glamorgan. Application and testing were undertaken as a separate and independent exercise from the development phase to maintain the integrity of the work by ensuring that those testing did not feel ownership of an initiative they were also involved in developing, thus attempting to achieve as much objectivity as possible. Two key objectives were met and these were to:

1. Identify any improvements to the generic framework and evaluation matrix
2. Identify changes that might be made in the application of the matrix specific to the University of Glamorgan.

The approach taken was twofold, with a stage one and stage two test. The outcome of stage one resulted in minimal changes to the generic framework, with greater emphasis on specific changes appropriate to the university, highlighting that this test coupled with previous critical review had reached a reasonable point of saturation.

Stage two was embarked upon with a focus group comprising Senior Management, Corporate and APT&C staff, none of whom were involved in step one. The focus group did not experience any difficulties in completing the questionnaire from a process perspective, and commented on the challenges in completing such a questionnaire in the context of having to think differently. This was an important observation as it reflected the learning that had begun about knowledge management at this early stage of intervention.

Overall the testing demonstrated that the framework and process to enable the application of the framework for critical self evaluation was robust from a theoretical and empirical perspective meeting the requirements of this intervention for knowledge management. The framework was then exposed to critical reflection and critique using the Generic Management Review Grid which helped to confirm the contribution to the area of knowledge management this framework provides. For example, with regard to current knowledge management frameworks, a comprehensive critique confirmed the need for robust theoretical and empirical underpinning in addition to a framework that is flexible enough to meet the diverse needs of organisations, whilst maintaining a sound structure and robustness in itself. This framework achieves this.

The review of knowledge management frameworks demonstrated a prescriptive and focussed approach, whereas this framework is based on the organisation identifying for itself what the current situation is and what they regard as being important, therefore it is neither prescriptive nor focussed and provides for a holistic strategic approach that has regard for the operational aspect of organisations encompassing the

various aspects of knowledge management that are interdependent dynamic and systemic.

Few frameworks demonstrated that testing to justify the proposed advantages of what was being presented was undertaken. This framework has been tested and whilst it can be improved upon, shows that it is useable and understandable for the practitioner.

9.3 Further Research

The research undertaken provides a number of further research possibilities. Some major ones are as follows.

- Are power and politics surmountable when trying to motivate and manage staff to share knowledge?
- Is senior management really interested in knowledge management (KM) or in being seen to be interested in KM?
- Are organisations sufficiently interested in strategy and the long term to address issues raised by employing this framework, or does a short-term view prevail?
- How can firms address issues highlighted by the KMR framework especially those requiring cultural change?
- In an environment where KM is 'sold' as a quick fix that can be achieved through a technology-based solution, how can senior managers be convinced that a human activity approach could be beneficial?
- How can the issue of the skills of the facilitator be addressed in a systems-based investigation and concomitantly paradigm commensurability be maintained, and does this matter?

9.4 Conclusions

It is contended that this thesis provides contributions to knowledge, that the research has limitations, and that there are a number of areas of further research that might be addressed. All of these have been discussed in this chapter and the preceding ones,

and the claims for the research outcomes are defensible and supported in this thesis. The critical reflections recognise weaknesses and limitations, but whilst it is important to recognise these, it is argued that this recognition strengthens rather than weakens the claims for this research.

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MODELLING THE CURRENT STATE AND POTENTIAL USE OF KNOWLEDGE MANAGEMENT IN HIGHER EDUCATION INSTITUTIONS

Main Thesis

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ABSTRACT

This research explores the development of a framework appropriate to evaluate the readiness of a university to engage with knowledge management. Many universities are evolving from traditional bureaucratic, hierarchical structures to become more flexible, adaptable, commercially viable and competitive and knowledge management is becoming increasingly important in this respect.

An over view of knowledge management clarifies what the concept is, and a critical review of current frameworks and models identifies gaps and weaknesses specifically in relation to empirical testing, theoretical underpinning and a holistic approach. This framework addresses those gaps and weaknesses and draws on organisational management, strategy, structure and culture, and systems thinking to ensure a holistic approach. These key elements provide the basis upon which a knowledge management framework is developed.

A Soft Systems Methodological approach with a critical dimension is used to underpin this research because enquiry into organisational problem situations is complex and unstructured, based on human activity and social systems. The framework is innovative and offers contributions to knowledge because it:

- is a new development within the domain of knowledge management. (it is intended to help evaluate the readiness of universities to engage in knowledge management);
- provides a new application of critical systems thinking (critical systems thinking is applied to knowledge management);
- uses a new synthesis (it was developed using a synthesis of soft systems principles, knowledge management concepts, and organisational theory);
- enables organisations to consider their situations in new ways (by enabling self-critique of KM readiness);
- offers new insights into the domain of knowledge management by means of the comprehensive and substantial literature review that helped its development.

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1. BACKGROUND

1.1 Introduction

It will be argued in this thesis that knowledge management is now of major interest to organisations in market economies. This is not least because as the private service sector has increased, knowledge has been increasingly recognised as a prime asset. This recognition has extended elsewhere, to include manufacturing, the public sector, and other organisations such as universities.

The term 'knowledge management' is relatively new in the ways it is now being used. It is meant within this thesis to refer to organisational knowledge as opposed to knowledge held solely by individuals. As will be discussed, organisational knowledge may take different forms, and the literature indicates that knowledge management has various approaches and definitions according to the perspective and discipline of the individual or organisation that engages with the concept. Domains of interest include management, individual and organisational learning, communications, information systems and technology, artificial intelligence, and intellectual assets amongst others. Each discipline approaches knowledge management with a different perception. For example, computing domains tend to focus heavily on technology, human resources take an individual and organisational learning approach emphasising learning and reward factors, and others may focus on intellectual assets and the explicit capture and registration of knowledge.

It is apparent that there is no single unifying definition or approach to knowledge management, and "relatively few articles are based on rigorous research, and most KM practice is not well informed by practice" (Edwards et al, 2003). There may, however, be some principles and content that can encompass the whole. For example, knowledge management involves people, processes, activities, technology and the broader environment that enables the identification, creation, communication, sharing, and use of organisational and individual knowledge. Despite this, without some idea from the beginning of what is meant by knowledge management in the context of this thesis, it would make reading difficult and possibly incomprehensible. However, a dilemma exists

in that the definition that will be proposed emerged from research, and it should be recognised that it is only stated here for ease of reading, and not because it was a predetermined view. With this in mind, the following working definition of knowledge management was been derived from theory, practice and reasoning.

Knowledge management refers to the systematic organisation, planning, scheduling, monitoring, and deployment of people, processes, technology, and environment, with appropriate targets and feedback mechanisms, under the control of a public or private sector concern, and undertaken by such a concern, to facilitate explicitly and specifically the creation, retention, sharing, identification, acquisition, utilisation, and measurement of information and new ideas, in order to achieve strategic aims, such as improved competitiveness or improved performance, subject to financial, legal, resource, political, technical, cultural, and societal constraints.

Although this is a complex and possibly hard to penetrate definition, it reflects the dynamism of knowledge management, maintaining the concept at a broad organisational level, and encompassing strategic and operational levels. To reduce the definition to a simpler format would weaken the definition in the context of this research. This may be evident when other 'definitions' of knowledge management are considered:

"The collection of processes that govern the creation, dissemination and utilization of knowledge to fulfill organizational objectives" (Murray and Myers, 1997, p32).

"A combination of management awareness, attitudes and practices, systems, tools and techniques designed to release the power of knowledge" (MacDonald 1999).

"Knowledge management is about

- supporting innovation, the generation of new ideas and the exploitation of the organisation's thinking power;
- capturing insight and experience to make them available and usable when, where and by whom required;

- making it easy to find and re-use sources of know-how and expertise, whether they are recorded in physical form or held in someone's mind;
- fostering collaboration, knowledge sharing, continual learning and improvement;
- improving the quality of decision making and other intelligent tasks;
- understanding the value and contribution of intellectual assets and increasing their worth, effectiveness and exploitation."

KPMG (1999, p2)

Ruggles (1997) recognises that knowledge management processes are not new, but what knowledge management must do is focus an organisation on improving its current actions to exploit the power of knowledge. Ruggles defines knowledge management as the "generation, codification and transfer (of knowledge). The power of knowledge management is in allowing organisations to explicitly enable and enhance the productivity of these activities and to leverage their value for the group as well as for the individual" (Ruggles 1997, p2).

Although the management of knowledge already occurs to a greater or lesser extent in the general business of an organisation, the actual concept of knowledge management and explicit awareness of what it entails is becoming increasingly important to all kinds of organisations, and this importance is growing. This is because, in the last decade, business success and survival have become increasingly difficult to ensure due to an increasing competitive and changing environment. The emphasis is now on adaptability to the business environment and on addressing market and customer needs proactively. Such changes have impacted across a wide range of sectors including higher education.

Not only has the higher education sector become more competitive, but government and business requirements of graduates have resulted in additional pressures and changes that are resulting in a paradigm shift in the sector (Barnett 1994). The Robbins report (1963) represented the initial turning point in which higher education moved from a cultural good or position of status, to being seen as an economic good. The impact for higher education over the next forty years represents a shift from the elite to the mass, resulting

in the incorporation of higher education into mainstream society (Barnett 1994). This shift to incorporation brings with it concerns about planning, performance review, productive capacity, social and commercial contribution, value for money and quality. Further, and directly relevant to the knowledge economy, Douglas Hague (1991, in Barnett 1994) stated that if educational institutions do not possess a monopoly on knowledge, then it is debatable as to whether they are necessary at all, and perhaps they should compete as with other knowledge traders in an open market. Hague's view of knowledge in this respect is that at the right price, as with any product, knowledge can be bought and sold.

Hague's view is relevant in the context of knowledge management because historically higher education institutions were viewed as the keepers of knowledge and were looked to for guidance and direction in society. In the post modern environment, knowledge and learning have extended beyond the higher education business, therefore increasing the competition that higher education institutions must consider. Placing this in context, the giving and receiving of learning could be seen as the production process in higher education, delivered within a knowledge industry, which is not solely the remit of higher education any longer. Yet whilst many knowledge based private sector organisations make efforts to engage with knowledge management at a strategic and/or operational or project level, higher education institutions, which are the original knowledge organisations, do not appear to have successfully engaged with the concept in the management of the business to the same degree. In addition, this thesis will demonstrate that there is a gap in the knowledge management arena in the provision of a model, system, or framework, that would guide (rather than prescribe) an organisation in critical self evaluation of readiness to engage in knowledge management. The purpose of this research, therefore, is to develop a framework to evaluate the readiness of an organisation to engage with knowledge management, specifically a university.

Sveiby (1999) offers examples of many knowledge initiatives in the commercial and public sector. New Government initiatives and research are exploring knowledge management activities in the public sector and lifelong learning is impacting beyond the

higher education industry. Yet, while private and public sector organisations are introducing and developing knowledge management concepts in the running of the business, universities appear to be constrained by bureaucratic hierarchical systems. Where subjects that show synergy could collaborate, they are curtailed by bureaucratic and financial constraints. Internal collaborative possibilities are bypassed because the logic of the system will not support them. For example, structure, systems and processes still support internal departmental competition, rather than corporate cross organisational initiatives.

From this perspective, one of the advantages that knowledge management potentially brings to a university is that it is not restricted to the notion of a fixed and rigid organisation in permanent or semi permanent environments. It embraces the notion of transition and virtual working with fluid, ever-changing knowledge communities, which operate in project teams as the situation requires. This is relevant as universities strive toward E learning and virtual working environments, and attempt to introduce collaborative project working and cross-functional teams.

For it to be successful, however, it is important that knowledge management is not viewed by managers as just 'another project', and it is important that it is seen as a key component of business strategy. But knowledge management is neither a strategic objective nor a goal, as there is no end state. Rather, it should be a continuing and integral part of the business, embedded in the culture as is the case for quality. Therefore if the success of knowledge management is to be judged usefully, it must be linked to performance measurement of the business areas on which it impinges. It is important to note, though, that organisational performance and competitiveness are reliant on human behaviour and business processes, not just technological developments, which appear to be the basis upon which knowledge management has developed to date. Although technological development is positive, it also brings with it disadvantages, for example, the increase in technology has diminished the opportunity for debate and conceptualisation, leading to the loss of tacit knowledge (Barnett 1994, Duke et al 1999).

It is, therefore, the setting up of appropriate and balanced systems to develop and implement knowledge sharing that remains difficult (Lehaney, Hunt, Clarke, 1999).

Balanced systems may be stronger if they are encompassed within appropriate theoretical frameworks. One relevant approach to developments of this kind may be mixed-mode-modelling (Lehaney, 1996; Lehaney and Clarke, 1997), since this explicitly addresses user involvement. For successful development and implementation, knowledge management must be seen to be worthwhile by users from an early stage. The cultural difficulties of persuading organisations to share knowledge in an environment where knowledge may mean power, money, and promotion, cannot be underestimated. This can be obstructive irrespective of the structure of an organisation and more complex in a mass higher education sector, where a university community comprises a dominant culture, and multi sub cultures with varying levels of communication, language, understanding, diverse contextualisation and inconsistency.

There is a great diversity of relatively strong "subcultures" that co-exist on any particular campus. This leads to powerful differences of perception, opinion, and lifestyle, which are common sources of conflict. As Peterson and Spencer (1990, p16) highlight, "The literature on differing perceptions of administrators, faculty, and students and on the differences among disciplines and professions is extensive. Sensitivity to the potential existence of subcultures and sub-climates is important for anyone doing (work) in this arena".

Such challenges can be recognised in the initial case study for this research, i.e. the University of Luton. A key factor in the change experienced in the higher education sector and demonstrated from research undertaken in the University of Luton, was the transformation of what were previously public sector organisations, into market-led businesses. The initial impact of changes has meant radical structural shifts, with greater delegation in management responsibilities.

A MORI survey of University of Luton staff conducted in 1999 highlights specific issues that negatively impacted on staff during previous radical and continual change. These issues include organisational communication, interaction with management, inconsistency in policies and procedures, decision-making and change management (Wisdom and Kingdom 1999). As a result of this research, the University of Luton proposed to introduce a holistic change management programme to establish an organisational culture that recognises the importance of communication and learning and the establishment of both vertical and horizontal integration. In particular cross-organisational working is of primary importance for the future (Private Correspondence with Prof K Robinson 2000).

The University of Luton has a community of approximately 10,000 students and employs 1131 staff (as at 1999). The nature of work undertaken includes academic, consultancy, administration, technical support, maintenance, hospitality and social and welfare support of students. With the exception of consultancy and backroom functions, the majority of work involves direct interaction with the student as customers or clients, the student as the final product of the university and the student as a member of the collegiate community. Business consultancy has developed from the pressure to transform academic research into financially viable and feasible activities to generate additional income for the university. Irrespective of how the student or external business relationships are viewed, the shared knowledge and interaction between staff, staff and students, and staff and business impacts on the extent to which an efficient and co-ordinated service and provision can be delivered.

The issue of organisational culture is key to this research. An organisation wishing to address team building and knowledge sharing would wish to create “buy in” from staff, particularly since the nature of knowledge work is high level and requires judgements from people. In view of this, participatory approaches to the development and implementation of performance and knowledge management systems are advocated.

In summary, fundamentally, universities are now operating in a competitive knowledge industry. There are key issues that must be considered in their management. For example:

- society is no longer willing to foot the academic bill and is now requiring particular standards to be met such as value for money and increased production, therefore increased competitiveness. Judicious knowledge management may help increase production and responsiveness, facilitate smarter working practices, thus reducing duplication of effort;
- the business and community's capacity for absorbing knowledge has increased. Knowledge management may facilitate knowledge sharing horizontally, vertically and with the external interface;
- academic freedom and institutional autonomy has been replaced by control, surveillance, evaluation, monitoring and inspection. Acceptance of the ethos of knowledge management may engender and encourage academic freedom at a local level whilst assisting monitoring, control, feedback, evaluation, and action to strive toward a more competitive position.

The academic focus has been diluted to incorporate a multi task and administrative focus though not by internal design, but more in a reactive way to external forces that may not be recognised or genuinely accepted by the academic community. Barnett (1994, p24) states "... higher education can not address the interdisciplinary problems of contemporary life unless it is thoroughly interdisciplinary itself". However, universities are now debating the distinction between teaching academics, researchers and administrative staff, and in essence are considering different types of knowledge workers.

Wider perceptions of intellectual development and knowing how and what you know in business operations, and cross organisational working are in their infancy in the higher education sector. The changes are driven by business and commerce, and Government policy, implemented through the Higher Education Funding Council (HEFCE). Among many aims, the HEFCE intends to develop and sustain partnerships between higher

education institutions, businesses and the community and to enhance higher education outputs to meet the needs of employers and society (HEFCE 2001). These HEFCE drivers impinge upon higher education decision-making and form an important part of the environment in which higher education institutions function. To help achieve these changes successfully, it is proposed that a knowledge management culture will support and enhance how institutions are managed. An effective framework to evaluate the readiness of HE Institutions to engage with knowledge management in the management of the business will provide an effective process to assist in strategic decision making in the sector, enhance competitiveness and responsiveness in an increasingly expanding and competitive knowledge industry beyond higher education and help to address the structural and cultural issues that may cause difficulties in establishing cross organisational knowledge sharing and retention.

It is intended that the framework will facilitate the opportunity for a HE institution to review current knowledge management practices by recognising positive activities that already occur thus achieving understanding and buy in, whilst establishing what should happen to improve practices that are detrimental to KM.

1.2 Aim

The aim of this research is to develop a useful framework, based on theory and practice, which is designed to help evaluate a university's' readiness to engage with knowledge management in a holistic way, which will provide useable decision-making inputs that are understandable to managers.

1.3 Objectives

The objectives are to:

- provide a critical review of the knowledge management literature;
- establish a theoretical foundation on which a framework for evaluating the readiness of higher education institutions to engage with knowledge management can be based;
- assess practices and levels of knowledge management within case organisations;
- review current knowledge management frameworks and develop knowledge management best practice criteria;
- develop, from the foregoing, a conceptual framework that can be used to evaluate an organisation's readiness to undertake knowledge management;
- evaluate the conceptual framework through exposure to critique;
- revise the framework in the light of the evaluation;
- utilise the revised framework in a higher education institution;
- critically review and revise the framework to produce a "final" version;

1.4 Chapter Outline

The chapter outline (figure 1.4.1) sets the literature review and overall structure in context. Chapter 1 offered a broad introduction to knowledge management, the changing business environment in the higher education sector and the initial case study undertaken in the University of Luton used to gather preliminary empirical work. Chapter 2 provides an overview of the research design and method, which evolved and developed throughout this research from a basis in SSM. Chapter 3 leads into the problem situation in more detail exploring the types of issues that emerge, and considers the initial advantages that knowledge management may bring to a university. This chapter concludes with discussion of issues that should be considered in a framework for the evaluation of an organisation's Knowledge Management Readiness (KMR). Chapter 4 discusses what knowledge management is in more depth and draws together ideas that a framework for

KMR could contain. Chapter 5 explores frameworks that are already in circulation both in the academic and business worlds. This is intended to identify gaps and weaknesses as well as ideas and best practice. Chapter 6 begins the process of formulating a conceptual framework through reasoned critical discussion and consultation. Chapter 7 focuses on the application and testing of the framework in the University of Glamorgan. Chapter 8 provides a critical reflection of the research and chapter 9 offers conclusions, the contribution to knowledge that this piece of work offers in addition to further research that may be undertaken.

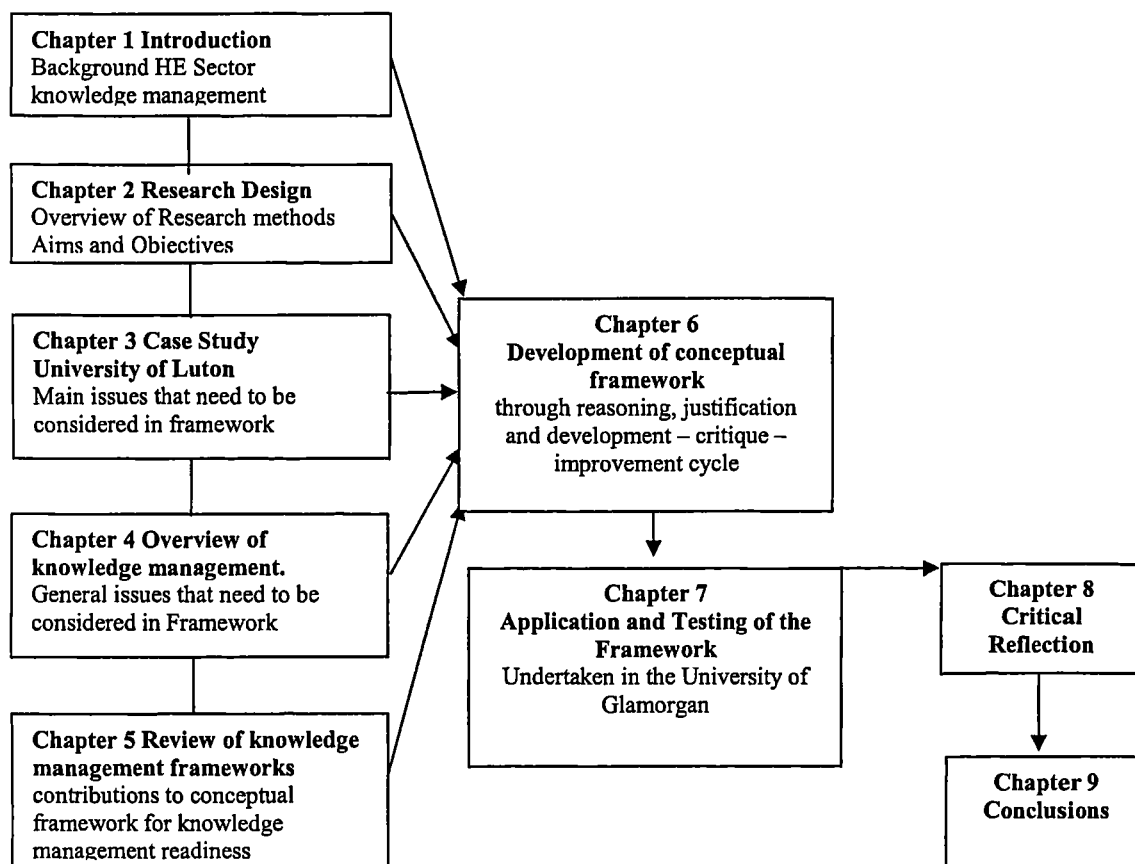


Figure: 1.4.1 Chapter Outline

With regard to the literature review, information regarding the higher education sector was taken from the HEFCE (1999/2000/2001), and texts that provide a historical perspective of how the higher education sector has evolved. There are many and varied texts available to explore management and organisational behaviour, for example Mullins (1996), Handy (1993) and Carnall (1995) discuss different aspects of behaviour, management and organisations. Huczynski and Buchanan (1991) focus on organisational behaviour. Pugh's "Organisation Theory, Selected Readings" (1992) was extensively used to review the development of management. Texts such as Johnson and Scholes (1993.), Pearce and Robson (1991), Ansoff (1976) and Bowman (1990) were used to review strategic management, and Buchanan and Boddy (1992) and Burnes (1992) for change management. Weick (1999) and Baldrige et al (1977) offer insight to universities which highlight the difference between universities and other organisation types. Commentary literature was derived from journals, and Internet sources. Journals such as 'knowledge management', 'Human Resources Management', the 'Journal of Intellectual Capital' provided current developments and discussion. Systems thinking, Soft Systems Methodology and the development of theoretical underpinning were drawn from Checkland (1981, 1990), Ulrich (1994, 2003) and Lehaney (1996, 1999). The review of knowledge management frameworks consisted of a broad review of various journals and internet sources (2000-2003).

To summarise, this chapter provided the background and introduced the aim, objectives and context in which the investigation was undertaken. The organisation of literature, introduces the scope and influences of information, representing a diverse and significant contribution to the multi methodological approach.

2. RESEARCH APPROACH

2.1 Introduction

This section discusses the approaches used for this investigation. It should be noted that this chapter reflects retrospectively the process of the investigation that was undertaken. The research design was continually evolving as learning and understanding developed, therefore sustaining sensitivity to findings and context. The study was qualitatively based using a combination of action research, observation, interviews, questionnaires, workshops and literature.

The research drew on the human activity system tradition and was qualitatively based. In describing such research, Gummesson (1991, p120) describes a fact as “definite and permanent, independent of subjective interpretation and independent of paradigm”, however, he states that in qualitative research ... it is unlikely that true factual data can be achieved. In essence, there is no direct access to ‘factual data’, but only to individuals’ and groups’ interpretations of data, which they themselves have received as others’ interpretations of data or personal perceptions of situations. The process of triangulation is essential in this respect to establish credibility and clarity and this is discussed in 2.3.

The underlying epistemology (i.e. assumptions about knowledge and how it can be obtained) was derived from an interpretive base with a critical aspect applied. Interpretive research assumes that access to reality is through social constructions such as language, consciousness and shared meanings. Interpretive studies generally attempt to understand phenomena through the meanings that people assign to them. Kaplan and Maxwell (1994) indicate that interpretive research does not recommend dependent or independent variables, but focuses on the complexity of human sense making as the situation emerges and changes.

This research attempted to explore and develop a framework in a multi-methodological manner, drawing from Soft Systems Methodology, and embracing pluralism.

2.2 Research Approach and Methodology

The research design illustrated in figure 2.2.1 is repeated at relevant points in this thesis as a convenient aid to remind the reader where information was gathered specific to each phase of research. Figure 2.2.1 shows how the investigation was undertaken. The process was context sensitive and it evolved as the research developed.

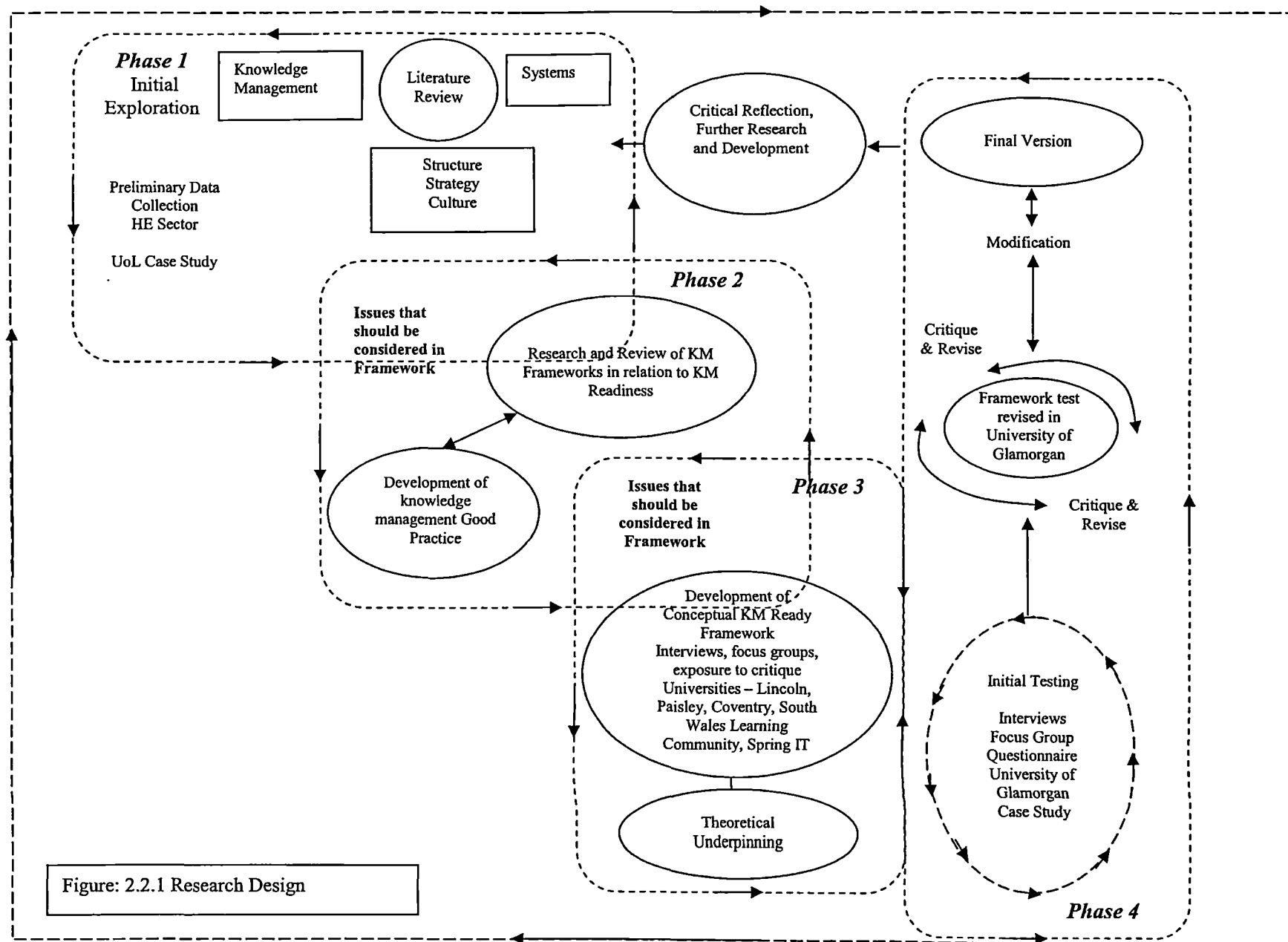
As this work used an action research approach Checkland's (1981) Soft Systems Methodology (SSM) was used (very loosely) as a basis. This choice was considered carefully and the arguments are noted here, however in order to maintain the flow of this thesis full and detailed discussion of SSM can be referred to in appendix 4.

First, it is worth noting that SSM may be accused of not being critical but based on consensus which underplays conflict and can result in compromise rather than radical improvement or change (Jackson 2000). It was used critically in this development, however, as will be shown in this thesis, knowledge management is all too often viewed as a technical domain (Edwards et al, 2003). SSM forces the consideration of other areas, such as social and political. Thus, by using this approach in this way, it avoids the development of a purely technical framework and acts as an ever-present critique.

SSM is aimed at human activity situations, learning from those situations and taking action to improve. Checkland (1981) describes the nature of human complexity identifying individual and group perceptions of a given situation, the social process, the culture, values and myths of how people make sense of the world. He regards SSM as being a process of holistic participative management achieving organised action. SSM also recognises the researcher's involvement, being part of the situation as well as exploring the situation. As such, SSM provided a guide and logical process of investigation that reduced subjectivity through participative wider perspectives of the situation.

Forbes (1995) highlights the advantages of SSM in relation to strategic management and planning, comparing traditional top down and prescribed strategic processes with a collaborative teamwork approach based on discussion and co-operation. A converse argument might be that such discussion could be carried out as a manipulative management approach, with those in power ensuring that debate is conducted in a manner conducive to their own abilities and desires. Buchanan and Boddy (1992, p77) define power skills in relation to change and the political arena of organisations as “the use of language to portray an image and influence the workforce, managing people’s perceptions”. Forbes (1995) does suggest, however, that the need for accurate information highlights the benefits of the participative approach, which can expose and clarify information and situations at varying levels in the organisation. Patching (1990) describes SSM as a meaningful way to engage in debate about structural, procedural and attitudinal changes among the workforce. He continues by explaining that SSM is not intended to find solutions, but to clarify issues and to establish a basis for further investigation and improvement. These perceptions of SSM were considered relevant to the concept of knowledge management since there is no end state and the ethos is continual learning and improvement.

In older (e.g. Checkland, 1981) versions, there are seven stages of SSM, but as Checkland and Scholes (1990, p27) state “The usual general description of SSM ... is presented as a seven stage process (giving) too much an impression that (it is a) process to be followed in sequence”. Checkland and Scholes (1990, p275) continue to explain that “SSM not only develops and changes, (it) also gets used in different ways by different users in different circumstances” in action and to take action. Figure 2.2.1, therefore, illustrates the customised or adapted model, developed by the author during this investigation. The adaptations reflect SSM and action research. The model contains four phases of investigation, within which clusters of activity were undertaken.



The model contains four phases of investigation, within which clusters of activity were undertaken.

Phase one incorporated the interpretive approach, using primary and secondary data collection through case study and action research. Action research has been accepted as a valid research method in applied fields such as organisational development and education (Checkland 1991). Case study research is the most common qualitative method used in information systems (Orlikowski and Baroudi 1991, Alavi and Carlson 1992).

Phase one identified the initial idea and formulation of preliminary objectives. Combining the initial data collection and literature review provided clarification of the wider issues, and influenced the development of this investigative model, which served to meet the aim and objectives and reflected a participative approach that embraced the varied issues that emerged in the research. This is the first stage of constructive research at the University of Luton (UoL) and the techniques used involved questionnaire surveys, focus groups with staff in the case organisation, interviews, participant observation, collaboration and a review of texts, journals, and minutes of meetings.

A literature review of knowledge management, the higher education sector, organisational structure, strategy and culture and systems helped to clarify the context in which the investigation was undertaken and raised issues for consideration in a potential Knowledge Management Ready framework. This in conjunction with the author's background knowledge and experience increased understanding about the issues and perceptions emerging in the overall situation and what could be considered within or contribute to the development of a framework to evaluate an organisation's readiness to engage with knowledge management.

Phase two explored current knowledge management frameworks that purport to address knowledge management. This aspect of research was relevant to the investigation to draw out contributory factors that could be considered in a framework for a university's Knowledge Management Readiness (KMR) and assisted with the identification of best

practice criteria, implementation approaches and weaknesses or gaps whether theoretical or practical.

Phase three was the formulation of the conceptual framework, undertaken through an iterative cycle of development, critique and improvement. It was at this stage of development that the need for further attention to critical evaluation beyond that which SSM was able to deliver when testing and ultimately implementing a framework became clearer. If critical evaluation had not been considered, the implementation of the framework in a university would have remained either prescriptive or descriptive. An evaluation matrix and underpinning theory were developed for the application of the framework.

Phase four involved applying and testing through empirical work in the University of Glamorgan, critical review and analysis of the 'final' framework produced and this was undertaken in two stages. Stage one involved interviews, focus groups and questionnaires, from which feedback informed further development of the framework. Stage two involved further testing of a revised framework undertaken with a different and independent group of staff from stage one, confirming a 'final' version had been achieved.

An important issue to emphasise is that this entire research approach was iterative, both overall and within each stage, using a development critique and improvement cycle. In addition, cross referencing from one stage to another occurred. In keeping with SSM, this model maintained a traditional qualitative approach with an action-oriented outcome. The ethos and principles of SSM were broadly upheld to maintain an overview and involvement in the investigation, complementing the overall multi methodological approach. The concept of Customer, Actor, Transformation, Weltanschauung (worldview), Owner and Environment (CATWOE) was used as a guideline to ensure that all components that should have been included were included, and those that were not were justifiably excluded.

2.3 Triangulation

Given the subjectivity of this research and the author's involvement as a participant observer, it was essential to try to ensure the reliability and validity of the research. Triangulation provided a recognised and useful approach, for example by a multi method approach, as was the case in this investigation. Denzin 1978 (in Decrop, 1999, pp158-164), identifies four different methods of triangulation:

- data triangulation, which involves the use of information, derived from literature sources and fieldwork ;
- method triangulation which is the use of multiple methods to solve a single problem;
- investigator triangulation, which requires several different researchers to interpret the same information thus avoiding personal bias, or alternatively, the use of an external auditor to review information and confirm its validity;
- theoretical triangulation, which is a multi-perspective such as anthropology, psychology, sociology etc to interpret the same data.

This research utilised investigator, data, and method triangulation. Method triangulation involved semi structured or unstructured interviews and meetings with internal staff and external experts. All primary and secondary research and fieldwork conducted in the University of Luton, through seminars and focus groups at Paisley University, Lincoln University and Coventry University, in addition to seminars conducted with the South Wales Learning Community, contributed to the initial development of a conceptual knowledge management framework. Testing of the conceptual framework in the University of Glamorgan in addition to further interviews, continued to progress the research incorporating triangulation to achieve a 'final' version.

Investigator triangulation included secondary research such as the University of Luton MORI Survey (Wisdom and Kingdom 1999) and a communication survey conducted by Bell Pottinger (1999). In addition the use of external collaborators such as the South

Wales Learning Community, Spring IT, and exposure of the potential proposal for critical review through conferences and journal submissions ensured the feasibility of this work.

Data triangulation included literature and fieldwork based on the University of Luton as an initial case study and included the author's own surveys conducted within the University of Luton such as Health and Wellbeing survey, change management focus group (Jack 1999), and University of Glamorgan focus group. The development of the framework underwent a development, critique and improvement cycle.

2.4 Conclusions

To summarise, this chapter provided the research design and methodology, describing how this investigation was undertaken. The research design is repeated at appropriate points in this thesis as a guide to demonstrate how it remained context sensitive, evolved and was applied. The work used an action research approach broadly drawing on SSM. SSM, however has been accused of not being critical, but it was used critically in the development of this framework and was further relevant because knowledge management is often viewed as a technical domain, whereas SSM forces the consideration of other areas, such as social and political human activity situations.

The research design shows four phases of investigation, within which clusters of activity were undertaken. Phase one identified the initial idea and formulation of preliminary objectives in addition to initial data collection and literature review.

Phase two explored current knowledge management frameworks that purport to address knowledge management representing a significant aspect of the research undertaken.

Phase three was the formulation of the conceptual framework, undertaken through an iterative cycle of development, critique and improvement. It was at this stage of development that the need for further attention to critical evaluation beyond that which

SSM was able to deliver when testing and ultimately implementing a framework became clear.

Phase four involved applying and testing through empirical work in the University of Glamorgan, critical review and analysis of the 'final' framework produced.

The entire research approach was iterative, both overall and within each stage, using a development critique and improvement cycle. In addition, cross referencing from one stage to another occurred. In keeping with SSM, this model maintained a traditional qualitative approach with an action-oriented outcome and the ethos and principles of SSM were broadly upheld to maintain an overview and involvement in the investigation.

Given the subjectivity of this research and the author's involvement, investigator, data, and method triangulation were utilised, demonstrating the multi-methodological approach.

3. CASE BACKGROUND

3.1 The Higher Education Sector

Chapter 1 offered an introduction to this research, the changes in the higher education sector which provide context in which the research is undertaken and briefly demonstrates the emerging benefits of knowledge management concepts to the business of managing a university. Chapter 2 provided the research design and approach taken. As highlighted in figure 3.1.1, Chapter 3 falls within phase one of the research design, and provides an account of initial emerging issues that arose from empirical work conducted at the University of Luton. Some background to this is provided first in order that the context is understood.

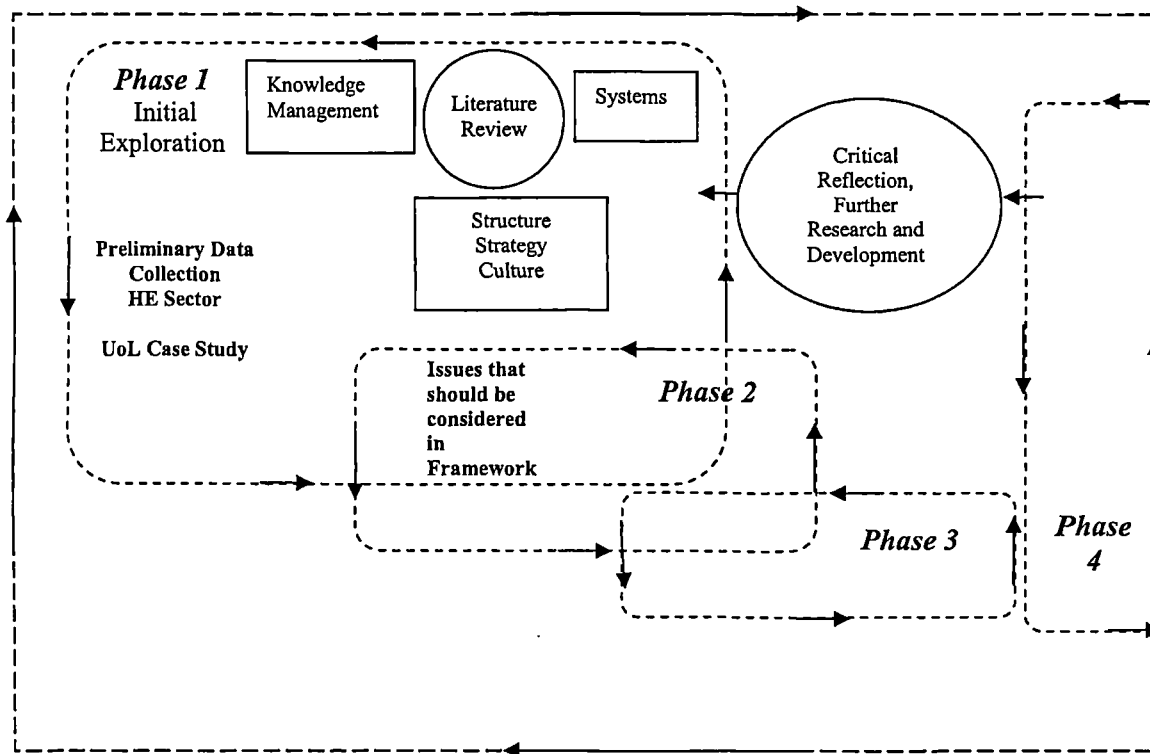


Figure 3.1.1: Research Design Phase One (adapted from figure 2.2.1) – The Higher Education Sector

The main influences for change in universities have been Government driven, particularly with the introduction of the Further and Higher Education Act 1992, and the abolition of the division between universities and other higher education institutions. Subsequently, the establishment of the Higher Education Funding Council for England (HEFCE 2001) assumed responsibility for the strategic development of higher education. Among the many HEFCE strategic objectives and organisational aims, the following are highlighted to demonstrate the potential synergy with the concept of knowledge management in a university (HEFCE 2001):

- the development and maintenance of effective partnerships with universities, employers, other funding and professional bodies, and others with a stake in higher education, by providing clear and open information and promoting collaboration between them (external knowledge management initiative);
- the promotion and support of productive interaction between universities, business and the community to encourage the transfer of knowledge and expertise, and enhance the relevance of programmes of teaching and research to the needs of employers and the economy. An important task in meeting these aims will be to forge closer, better informed and more productive partnerships between universities, businesses and the community and with other agencies. All universities need to recognise the full value of the knowledge and expertise of staff. This will require commitment and action across each institution (external knowledge management initiative);
- the promotion of effective financial management, accountability for the use of public funds, and value for money. Universities are regarded as independent organisations responsible for managing their own affairs effectively and efficiently. HEFCE are responsible for ensuring that funds provided for teaching and research are only used for those purposes, while promoting value for money. Emphasis is placed on action to minimise future financial risks by pushing universities to diversify their income streams; to charge the true price for research and consultancy activities; to control recruitment spending and to remove any duplication in the business through increased collaboration. (External knowledge

management initiative, however the issue of duplication could be an internal or external initiative).

Universities are expected to produce strategic planning processes that are actively used to manage including financial management, strategic management of information resources and management information for decision making. Also included are effective equal opportunities policies and procedures, learning and development from international experience and the development of virtual distance learning (HEFCE 2001). External influences, both technological and political, are bringing the economies of the world towards greater integration and increasing world competition as much in education and training as commercial business. HEFCE (2001) recognise that increasing premiums are being placed on knowledge which, in turn, makes national economies more dependent on higher education's development of people with high level skills, knowledge and understanding, and on its contribution to research. Whilst more investment is needed in education and training to meet the international challenges, universities need to demonstrate that it represents a good investment for individuals and society.

It emerges from the foregoing that Higher Education is in a period of change. Individuals increasingly need to develop new capabilities and to manage their own development and learning. New technology is impacting extensively and has implications both for the skills which universities need to develop in students, and for the ways in which education is managed and delivered. Communication and information technologies may improve the quality and flexibility of a university and its management; however, implementation requires investment in terms of time, through resources and senior management commitment.

In addition to technology, the health of a university depends entirely on its staff, whether academic, professional or administrative and the need for recognition, opportunities for personal development, and rewards. Roles of staff are likely to change, as they undertake different combinations of functions at different stages of their careers. To support and prepare staff for new working patterns, more focused and appropriate training and staff

development activities are needed. HEFCE provide funding in support of this through the "Rewarding and Developing Staff" (December 00/56), and "Good Management Practice" initiatives (August 99/54).

When considering the key issues discussed in the previous chapters, several areas emerge that seem relevant to a framework that would help assess the readiness of university to engage with knowledge management:

- development and implementation of internal policies and procedures;
- the ability to learn and share the learning experience, thus avoiding duplication and improving effectiveness;
- effective IT infrastructure to ensure the tools necessary for accuracy, speed of information exchange and storage;
- training, development and awareness of expertise of staff i.e. knowing who knows what;
- reward and recognition of employees, incentives to encourage knowledge sharing;
- management competencies for the effective implementation and inspired leadership in knowledge management;
- ability to create, share and utilise knowledge with other organisations and higher education institutions and awareness of the global marketplace, the external knowledge management focus.

These drivers impinge upon university decision-making and the concept of knowledge management, and form an important part of the environment in which universities function. The initial impact of changes on the (previously) Luton College of Higher Education (LCHE) and (now) University of Luton meant radical structural shifts, with the creation of highly delegated management structure, and more recently, full scale strategic repositioning. The scale of change can be indicated by comparing the 1989-90 full-time equivalent student numbers (4200) and student/staff ratio (13:1) with those of 1999-2000 (10,122 and 18:1 respectively).

As part of its strategic repositioning, the University of Luton initiated an organisational-wide change management programme to establish an organisational culture that recognises the importance of communication and learning and the establishment of both vertical and horizontal integration. In particular cross-organisational working was of major importance for the future and such change fell within the domain of knowledge management. These issues and other related background are discussed in section 3.2.

3.2 University of Luton

The University of Luton became incorporated with the Higher Education Funding Council for England in 1993. It is a continually changing organisation, which is necessary to survive in an increasingly competitive higher education sector. The higher education sector generally has undergone fundamental change throughout the past five years, with changes to funding shifting the emphasis from a free provision to a commercial commodity that students are required to purchase. Greater pressures are being placed on the workforce, to improve quality, accountability (HEFCE Dec 00/56), and performance (HEFCE Aug 99/54), and the University of Luton continues to strive to enhance corporate performance and attract income at a time when resource allocation continues to decline.

A key factor in the change experienced was the transformation of what was previously a public sector organisation, into a market led business that would be required to consider customer demand, commercial financial management and high quality provision. Such transformation was viewed as radical change by many staff.

The impact on the University of Luton meant structural change with the creation of a "...flatter, simpler and highly delegated management structure..." (Wood and Bunker 1994, p76). The intention was to provide greater empowerment for faculties with devolved budgets and the opportunity to determine resource allocation within the overall corporate objectives. Faculty-based, pre-set courses were replaced by a modular scheme, offering students the opportunity to customise their degree programmes. This resulted in

traditional course teams becoming more disparate but, the overall structure of the organisation remained faculty based. Furthermore, internal competition for students contributed to an emerging obstruction in communication, despite the increase in electronic communications. Thus it is important to note that 'improving' technology is not a necessary nor sufficient condition for improving communication. Indeed changing the internal culture to one of competition from one of cooperation can worsen communication. Whilst technology can be helpful, the emphasis of knowledge management should be on cross-disciplinary approaches and "the mixing of 'hard' (e.g. technological) and 'soft' (e.g. cultural or motivational) issues (Edwards 2003, p1)

Other activities during the period 1991 to 1994 in the University of Luton included the establishment of a central staff development unit to support and sustain the culture shift. The combined pressure of growth and structural change made it essential for staff development activities to be given high priority and a Quality Network was introduced in 1991, which stressed the importance of honesty, trust, respect, empowerment, consultation, teamwork and equal opportunities, all supportive of the knowledge management ethos. Harding (1995), however, describes what could have been the ineffectiveness of these initiatives through a work-study conducted into staff attitude. Several key points emerged from this study that identified underlying reactions to the change experienced during this period. The most significant was that there was not and still is not the opportunity to engage in peer/social support, informal communication and to generally discuss issues of concern that may have arisen. This appears to have resulted in confrontational behaviour by older academic staff particularly toward their younger counterparts, clearly a significant obstruction to the concept of knowledge management and detrimental to succession planning and organisational memory. Training and personal development opportunities were limited because low staffing levels reduced the possibility of release to attend training sessions, and formal communication and participation in decision making was inadequate. The foregoing was further reinforced through recent surveys conducted in the university such as:

- market and opinion research international (MORI) survey in 1999;
- internal communications survey (Bell Pottinger 1999);
- health and wellbeing survey (Jack 1999);
- IT survey (Jack 2000);
- 360° Pilot feedback focus group (Jack 1999);
- change management focus group (Jack 1999).

All of the above contributed to the case background and provided secondary and primary research which was considered from a knowledge management perspective. This is discussed next.

3.3 University of Luton Secondary Research

3.3.1 Market and Opinion Research International (MORI) Staff Survey 1999

The MORI staff survey arose in part from recommendations made during a preceding 'Investors in People' assessment. The intention was to undertake a major staff satisfaction survey among all sections of the workforce. The questionnaire was designed, delivered and analysed by MORI using questions drawn from their own experience and from focus groups held with staff.

All staff were given the opportunity to take part in this survey and 611 returns were received, representing 54% of the workforce. The results were helpful and informed understanding about the university, identifying associated issues that could be addressed by knowledge management. In this respect, the most relevant questions or statements and results are highlighted in appendix 1.

Overall, according to the MORI survey, there was a perception that the current culture and attitude in the university, is bureaucratic, demanding, authoritarian and inflexible. Comparing this with how staff would have preferred the organisation to be in the future, 85% indicated that they preferred a motivating, organised and caring organisation, which

is creative, exciting and dynamic. Communications emerged as a specific problem, in particular the perception was that:

- there is not enough opportunity for staff to let management know about things that affect them and their work;
- there is inadequate consultation on management decisions;
- there is little recognition for the work produced and poor feedback on performance and praise for good work;
- disagreement with issues proposed by senior management can damage career prospects.

Although most staff understood and supported the need for change and indeed looked forward to the challenge, they did not feel involved and believed that the change process was poorly managed, particularly communication. Despite this, staff had a clear understanding of the contribution they were expected to make and understood the organisational objectives. The majority of staff felt that they have accomplished something worthwhile at work.

The outcome of this response indicated the negative attitude that staff had toward the senior management of the organisation. This could present a significant obstruction to the university in terms of knowledge sharing and creativity. For example, Parlbay (2000) describes the need for trust and confidence throughout the organisation, necessary to foster the appropriate culture for knowledge sharing. However, even with such a culture the issue of power and politics may remain at an individual level, indicating that any organisation without the right culture would not be in a position to contemplate knowledge management.

The history of the University of Luton was one of continual change, in what appeared to be an authoritarian, task oriented management environment. Harding's (1995) work study exposed conflict, limited opportunities to attend training, poor communication and lack of involvement in decision making during this period. The results of the MORI

survey, conducted in 1999, provided a more recent overview of staff attitudes in the university, and revealed that the main issues of concern related primarily to organisational communication and interaction with management, decision-making, and change, motivation and innovation. In addition, stress emerged as a major issue of concern and was explored further by Jack (1999), appendix 2. Although the focus of Jack's survey primarily explored health and wellbeing from an organisational management perspective, similar issues were raised that relate to communication, management and planning, again highlighting potential obstructions to engage with knowledge management.

3.3.2 Health and Wellbeing

The overall aim of Jack's (1999) research was to investigate management approaches based on a case study scenario relevant to universities in relation to wellbeing in the workplace, and consider the potential improvements in performance and effectiveness that may be achieved by appropriate management practice. Management and organisational behaviour were investigated in relation to psychosocial factors and the impact on wellbeing, with comparisons to examples of modern working environments and management practice. Strategic management in relation to 'human assets' was discussed concluding with the proposal that managers should include psychosocial factors that influence wellbeing at a strategic level, particularly in people intensive knowledge based organisations. A combination of a survey, semi-structured interviews and meetings with internal staff and external experts contributed to knowledge and understanding about the organisation and emerging issues. Internal research such as the MORI survey influenced the author's choice to focus specifically on a research survey to measure attitude toward wellbeing at work.

This is relevant to knowledge management in two respects. In the first place it could be suggested that general wellbeing and positive attitudes in an organisation contribute to the effectiveness of knowledge sharing. If the overall disposition of the workforce is negative and 'unwell' then individuals may be less inclined to contribute to such an

initiative. Second, the concept of formal and informal knowledge sharing could be beneficial in generating a culture of peer support and improving the overall wellbeing of the organisation and assist in the reduction of stress.

A total of 95 responses representing 19% of the full amount of questionnaires issued were returned. As an independent exercise, this response rate could have been considered as low, but as a contribution to the broader investigation, it was adequate to provide indications. When querying with several staff why responses were not made, the main comments related to time constraints. In addition, many unopened envelopes were returned because the targeted member of staff had either left the university or relocated, but post was returned rather than forwarded on. This in itself raised an issue about communication, which, as demonstrated in the MORI survey was of concern to staff generally.

The responses in appendix 1 are summarised below. The most relevant are highlighted for consideration in respect to knowledge management.

There was a tendency among staff that indicated the university did not care about their health and wellbeing. Although senior management believed that it did, it could be assumed that that senior management's position was not communicated enough to staff, or senior management attitude did not demonstrate that which they believed to be the case. Department managers did not appear to have adequate time for staff management due to their own workloads. This can result in de-motivation, lack of leadership, recognition and poor performance. Alternatively, there may be a case in relation to time management and making time for staff. On the issue of leadership, Peters and Waterman (1988) state that leaders who throw themselves into a relationship with followers can make the followers feel elevated, who then become more active and interactive themselves, thereby improving performance. In relation to knowledge management, leadership of, a commitment to, and time for staff, underpinned by effective communication may improve the chances of success. However, based on the results of the surveys to this point, there was a strong indication that the University of Luton

needed to review management approaches and procedures before embarking on a knowledge management initiative.

When considering management of stress, the majority of staff agreed that management was not aware of rising stress and de-motivation. Staff did not generally feel that their wellbeing and motivation were considered within the overall planning and systems that were implemented. An interview with the Health and Safety Manager (Dr I MacKirdy, September 2001) revealed that stress was a significant issue, identifying management style and communication as being the main causes.

In summary, a review of management style, improved communication, systems and procedures, which could increase motivation and performance, may also contribute to the development of a culture conducive to knowledge management in the University of Luton. Comparing the results of this survey to the MORI survey, planning for change, participation and consultation were clear indicators of dissatisfaction. Additional feedback through this survey suggested that department managers' level of empowerment, authority and control were questionable, which correlates with the results of the MORI survey. There were, however, good examples of positive delegated authority, empowerment and control such as Teaching Quality Assessments where matrix team working in the organisation temporarily improved levels of communication and interaction, with both explicit and implicit knowledge sharing, which achieved positive outcomes. This however was not sustainable because it was an exercise in addition to core roles and not embedded in working practices.

Despite the focus of many of the statements in this survey staff placed high emphasis on communication. Recognising this, further exploration specifically into communication, was undertaken in conjunction with external consultants and this is discussed next.

3.3.3 Communications

Communication emerged as a key consideration initially in 1999 and again in 2001, as an issue of concern for staff at all levels in the University of Luton. Effective communication both internally and externally was seen as important to establish a positive reputation and effectively implement strategic objectives. Corporate communications, therefore, were explored further through focussed research conducted by Bell Pontinger (December 1999), across the university at every level. The author reviewed and analysed minutes and reports produced by the university's Communication Steering Group. The following key areas were considered:

- the quantity and quality of current communications;
- the existing feedback mechanisms (formal and informal);
- identification and analysis of the internal community;
- employee attitudes towards the current internal communication efforts;
- the different sources of information used by employees (both formal and informal sources) and their respective influence on employee attitudes;
- employee expectations from internal communication;
- current attitudes towards the organisation.

The results of this review highlighted that internal audiences did not feel equipped to defend or promote the university. Key messages and strengths were unclear in both internal and external communication. Although a high quantity of information was produced, and for some, resulted in information overload, the quality of the content needed to be improved, for example, the perception was that some communication had a defensive tone and was not targeted or categorised effectively.

The university visual identity (logo etc) failed to communicate corporate aims or values. This has since been renewed, however there is no evidence as yet to indicate whether it has had any effect. 86% of staff wanted clearer communication, in particular, about the university's strengths. Two thirds of staff felt it was important to know about student

achievements. 65% of staff received their information from colleagues and 35% relied on the grapevine. Fewer than half the staff felt they were kept fairly well informed and half felt that the information given was believable, but one-quarter suggested not always (Bell Pottinger 1999).

An Internal Communications Steering Group initiated and chaired by the author as part of this research was established to explore all avenues of communication including paper based, Intranet, Internet and email. A major issue of concern was the use of internal emails, in particular all-staff emails, and improvement of the university Intranet site. The Communications Steering Group considered issues such as technology, training, resources and time scales for introduction. The highest priority for the Steering Group was content, form and structure that might inform the development of an improved Intranet for the university including:

- information, resources and services accessed via the Intranet. However, whilst some discussion was held relating to desensitisation and the need for alternative communication avenues, this was not debated in the broader sense nor was a final conclusion or proposal reached;
- access and the need for different forms and/or versions of some intranet resources to make them more specifically relevant – and helpful – to the general groups who might access them, i.e. different clusters and forms of help desk services to support the needs of students and staff;
- the future design and development of the Intranet based on three domains or functional areas which would include corporate information, help and advice, personal/individual information.

The intranet was considered to be the university's authoritative information resource governed by the principles of self-help and self-service. Initially much of the information resources (documents, handbooks etc) were to be mounted in their present physical form but would subsequently be developed to make them more "e-environment" applicable and appropriate. Such material was to be governed by general rules covering temporal

currency and life, the point at which it was archived, and request procedures for access to archived information. A central policy was to be established that set document life “kill by” dates, rules established for publishing to the intranet, parameters set for design structure, functionality and “house style” and guidance provided on acceptable use.

Critically reviewing this approach it should be considered that if an intranet is to be a university’s authoritative information resource then all staff require reasonable access to the Intranet from networked desktop computing resources. Similarly students need sufficient access points and computing resources to support the increased access frequency and time spent exploiting the information and services intended to be available via the Intranet. This implies the need for the university to strategically plan for the procurement and delivery of such resources to ensure the success and utility of the Intranet, and at that time whilst this would have been desirable, it was not financially feasible for the university, nor was there a culture of knowledge sharing and expertise to develop an appropriate system.

As was demonstrated through the MORI survey (Wisdom and Kingdom, 1999) and Bell Pottinger survey (1999), the university regarded communication as being of critical importance to the organisation and until the most fundamental aspects of information gathering, storage, access and sharing is achieved to a reasonable level, it would be difficult to move toward the development of a holistic knowledge management strategy without such tools to underpin and facilitate the concept. Conversely even with the highest specification technology in place, without the appropriate management style, culture and processes to embed the concept of knowledge management, a holistic knowledge management strategy would be difficult to implement, hence the importance of balance as argued by Dwivedi et al (2002). Dwivedi et al produced a holistic knowledge management framework for healthcare institutions, within which they recognised the importance of integrating information communication technology and knowledge sharing, stating that healthcare institutions needed to “identify key sociological and technological roles” to achieve the culture change necessary to improve

efficiency. Bali and Dwivedi (2004) explore organisational culture and the implementation of management information systems, introducing the Management Information System Culture-Organisation, which combines the intangible requirements of culture change with the implementation of a new IT system. In both cases the importance of balance can be recognised.

To make effective use of technology, an organisational framework and structure that recognises the need for culture change could be established that links Intranet authoring and development staff with those within central support departments such as the Information Services Department. Skills, competencies, and to some extent roles, in these areas already exist in certain parts of universities, but to be effective and coherent such roles could be established in all functional areas and their activities co-ordinated and formalised through an appropriate organisational structure and mechanism. The role of a communications group would then be to co-ordinate the contribution, production and development of Intranet resources and services and to maintain the suitability and temporal currency of information. Such a structure is illustrated in figure 3.3.1:

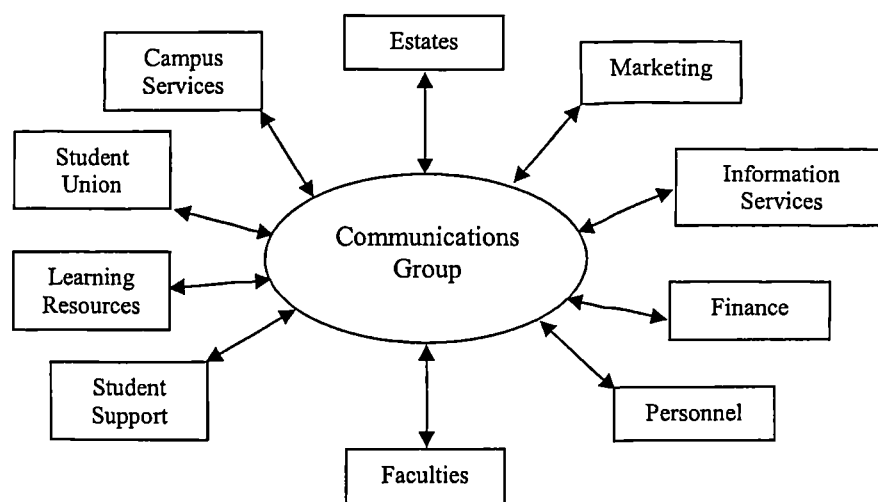


Figure 3.3.1 IT Based Knowledge Co-ordination Structure

Figure 3.3.1 provides an example of a potential structure for communication and information exchange and co-ordination, whereby university departments could take responsibility for the content within their own areas of the Intranet. This would require information officers within each area – faculties and departments – who would have responsibility for creating and updating their own areas. The Communications Steering Group would then become the recognised co-ordinating group, ensuring appropriate provision of information and quality for all electronic communication, including web site, intranet and emails. However, the Communications Group would need authority and senior management commitment to support decisions, and each department would need ownership and consensus to cultivate cross-organisational working, communication, eventually developing into knowledge sharing.

It emerged that the University's highest priority was the development of IT based communication. Emphasis was placed on a systematic centrally controlled structure. However for success, additional investment in staffing, hardware, software, training, and management commitment and understanding are an essential requirement. The university did not feel it necessary to consider the broader aspects of communication, such as informal, social or paper based, yet 45% of staff stated that they relied on the 'grapevine' and many did not have ready access to electronic communication tools. It appeared, therefore, that IT was continually identified from above as the solution to many communication problems, rather than a step toward facilitating the development of knowledge sharing. Further, if the 'grapevine' or direct interpersonal communication was formally recognised as part of the organisation's communication channel and 'managed' or facilitated effectively, it could be an important source of knowledge sharing achieved through a discursive process which maintains an added value and richness that would otherwise be lost. This brings the discussion back to consideration of management approaches and the ability to manage inter-relationships and maintain high levels of effective communication. This and other aspects of management development are explored next.

3.3.4 Management Development

Management development is necessary if knowledge management is to be embraced and progressed. Following the outcome of the MORI survey (1999), the Bell Pottinger survey (1999) and Jack (2000), the author undertook further research into management development, which included a pilot 360-degree assessment to measure management competency in view of strategic repositioning and external pressures to improve management performance necessary to achieve cross organisation working practices. The objective was to establish current management and organisational competencies and conduct a gap analysis against that which the university would need in relation to strategic repositioning and cross organisational working, from which a management training and development programme could be designed.

The 360-degree assessment was, at the time of this research, emerging as a human resource management technique in many organisations, large and small, and was being hailed as the most effective method of monitoring performance management (Goodge and Watts 2000, Peiperi 2001). The 360-degree assessment is a process through which managers' performance is reviewed by peers, subordinates and superiors, thus providing a rounded view of strengths and weaknesses. Goodge and Watts (2000, p 50) state that this process or technique "is inexpensive, widely applicable, and clearly focussed upon personal performance" if managed effectively. However, many 360-degree feedback initiatives fail through poor management of the process. Furthermore, Peiperi (2001) observes that peer review can be particularly problematic due to organisational politics and interrelationships. The University of Luton experienced both sets of problems which revealed key issues relating to culture, attitude and the 'health' of the organisation all of which could potentially negatively impact on the University's ability to engage with knowledge management.

In the first instance, there was little management commitment to undergo the 360 degree assessment, and of the managers who did engage with the process, many did so reluctantly. Secondly, to reduce costs, the entire process was to be conducted

electronically, but the software provided by the external consultancy was incompatible with university's systems. The group of participants displayed scepticism and wariness particularly regarding the selection process and the balance between academic and support managers, which highlighted the divide and differences between the two cohorts of managers and raised issues about organisational politics and interrelationships. Considering these revelations in the context of knowledge management, the lack of commitment, financial constraints, ineffective IT systems and negative attitudes toward an opportunity to improve performance points to inhibitors to the potential for knowledge management in the university.

Participants critically reviewed their own job descriptions compared to actual tasks undertaken, including dual roles and managers' time to conduct their current level of work, rather than considering perhaps new management competencies necessary to underpin the concept of cross organisational working and strategic repositioning in an increasingly competitive environment.

During and following the pilot, the author undertook telephone interviews with fourteen members of staff to explore in more depth some of the key issues that were emerging which revealed the following:

- questionnaires relating to the performance of managers provided a useful indicator of significant problems, for example, breakdown in communication in teams, and lack of leadership. The university's expectations of middle to senior managers, however, could be made more explicit;
- more could be provided for middle to senior managers relating to transparent objectives and supportive performance assessment exercises 'in house';
- undertaking an exercise such as this using IT only was incredibly user-unfriendly, too high tech with little opportunity to collect rich information;
- time to undertake this initiative was difficult.

The result of this component of exploration contributed to the overall research into the ability of an organisation to engage with activities associated with the concept of knowledge management at a fundamental level. Straightforwardly, it is clear that it is essential to secure senior management commitment and support, without which other recipients will not see the relevance of any given activity and changes in culture and attitude will be less likely to be successful. It is also recognised, however, that it is not senior management commitment alone that will secure success but 'buy in' from staff at various levels is equally important.

'Buy in' however presents a different challenge, because feedback during this exercise indicated that individuals often work independently and managers may have little contact with their peers, staff, and even within the same department, individuals may be unfamiliar with each other's abilities, roles and experience. In these circumstances, the implementation of a knowledge management strategy and culture could improve interactions, however this would require high levels of management competency in communication and relationship handling and change management with strong focussed commitment to achieve the right approach. This aspect of the University of Luton was explored further and is discussed next.

3.3.5 Change Management Focus Group

The author convened a change management focus group, comprising a cross section of staff at various levels, to explore different approaches in dealing with the organisational change that the University of Luton was experiencing, in particular to diagnose and address communication needs and explore management style bias. Many issues were addressed including staff's feelings of self-preservation and uncertainty that can be experienced during times of change. In particular managers needed to be aware that what they regard as restructuring and repositioning may be regarded by those upon who change impacts as destructive, raising levels of anxiety, disbelief and perceptions of being poorly treated. A major impact in relation to change in the University of Luton was mistrust between senior management and the rest of the organisation, and the

pressure on middle managers to implement and maintain change, whilst attempting to co-operate with senior management and their teams.

Middle managers indicated that they lacked confidence in their own abilities and the direction that the organisation was taking because they did not receive consistent and reliable information to manage effectively, and were aware that senior managers received distorted information about what was actually happening on the ground. Resources continued to be a major issue, and anxieties about this were exacerbated during downsizing. Low staff morale impacted on students and potentially the future attraction of the university and quality of service. The timing of change was regarded as important, and in the University of Luton's case, significant structural change occurred toward the end of the academic year, with the additional stress of exams, final assignments and marking. The net result was cynicism, loss, destructive, abrasive emotions and attitudes, feelings of guilt and failure.

Having exposed the impact of change, the focus group was moved to provide suggestions to improve the situation. Unambiguous communication and support emerged as the most beneficial way to manage change. A plan of communication with co-ordination and identification of specific times of change, for example the use of milestones was viewed as important to the process. Accurate communication, irrespective of whether the information given was positive or negative was seen as essential to manage staff expectations and to combat rumour. The focus group agreed that managers should consider what staff need to know, what the anticipated change is, why it is necessary, how it would be managed, where information could be accessed, when action would be taken, and who staff could discuss issues with. The focus group recommended that internal and external messages should be consistent both about the present and the future. Real, as opposed to 'quasi' consultation and involvement in decisions was viewed as essential to empower middle managers and provide ownership, which would help to establish senior management support and a sense of teamworking across organisational boundaries, as well as the 'buy in' necessary to strategically reposition the university.

In addition to paper based or electronic information, the focus group recognised the importance of opportunities for staff and managers to meet, and discuss issues in person and in teams. However, it was also recognised that middle managers felt they were losing credibility with their staff, because they were not being kept fully informed, and when they did ask questions, they were not being given clear answers, which resulted in conflict between middle managers and senior management, and middle managers and their own teams. The focus group discussed authority and motivational issues highlighting that whilst managers had the responsibility to implement change, they did not feel that they had the authority to reward staff who progressed positively, or to discipline staff if the need arose. The issue of disciplinary procedures was key to managers and discussion ensued about the setting of boundaries and standards that university contracts and managers expected staff to work within, and how these were changing without adequate support, training and development.

Placing the outcome of this focus group in the context of knowledge management, it is clear that to establish a cross organisational process that would facilitate sharing and enhance communication, a combination of senior management support, accurate communication, relationship handling, empowerment, involvement and consultation would improve the opportunity of engaging with issues of change, cross organisational working practices, change and the development of knowledge management. Time, however was another key issue, and the need for co-ordinated administrative support to release managers' time and provide appropriate levels of support to achieve cross organisational working practices.

3.4 Conclusions

This initial phase of research provided understanding about a university's key issues and challenges that would need to be considered if a university were to consider developing an approach to knowledge management. The University of Luton experienced a series of continual step changes from 1992 to 2000, when this research was undertaken. The perception was that the change experienced was in an environment of authoritarian, task

oriented management. The results of the MORI survey, conducted in 1999, provided an overview of staff attitudes in the university, revealing that the main issues of concern related primarily to organisational communication, interaction and relationships with management, participation in decision-making, empowerment, training and development, change management, motivation and innovation. Stress emerged as a major issue of concern in the MORI survey and was explored (see 3.3.2). This research exposed similar issues, revealing that communication, management and planning were key contributors that would impact on the successful implementation of knowledge management.

Communication issues were explored further (see 3.3.3) and a Communications Focus Group was established to review all aspects of communication in the university, the main focus at the time being on E communications. The university was striving for improvement and had positive intentions, which would contribute to the development of explicit sharing of information and an appropriate infrastructure to underpin this. However evidence emerged that demonstrated the increase in internal competition and reduced knowledge sharing. In addition, the University of Luton introduced a cross organisational change management programme, the intention being to address the university's culture. A key feature of this initiative was the role of a change manager, accountable to the Pro-Vice Chancellor, who acted as a stimulus; co-ordinator and motivator across all projects and initiatives, to generate cross-organisational interaction, knowledge sharing and working practices.

An essential premise of this position was that organisations cannot successfully adapt to fast changing external environments by engaging in a number of isolated mechanistic internal development projects which pay little attention to each other or to the culture of the organisation. In contrast an integrated and cross disciplinary approach was considered more likely to build a strong infrastructure of values and beliefs as well as shared business practices. Based on these examples, much of the work of co-ordination and integration in the University of Luton was carried out by the dedicated change manager or knowledge manager. This role required the ability to move freely throughout the organisation and build up an accurate picture of the progress and impact of change

and development as a whole. The intention was to explicitly recognise the current and desired organisational culture; the importance of communication (IT based and interpersonal) and learning and the establishment of both vertical and horizontal integration.

Taking into consideration the changing higher education environment and emerging external forces, in addition to the results of University of Luton primary and secondary research, it was clear that although there was an interest in knowledge management, for example through the appointment of a cross organisational facilitator and developer, there were organisational issues that needed to be addressed before reasonable engagement with knowledge management could be achieved. The following summarises the key university issues and identifies the potential advantages of knowledge management.

Primary and secondary research identified that interrelations between staff and management, internal and external partnerships with other universities, employers, funding and professional bodies and community organisations should be developed and improved. An appropriate knowledge management strategy beyond technology may alter the focus of the university placing such issues at the core and make explicit the priority and advantages of good interrelations to engender knowledge sharing. Included among the issues that emerged were value and recognition, feedback on performance, empowerment and authority, participation in decision making and consultation. In this sense, an effective knowledge management strategy and ethos is more likely to recognise the value of staff, an important requirement in a university where experts specialise in knowledge based work and the concept of development through learning and sharing should be based on mutual respect, confidence and trust in individuals' contributions to the overall university. The success of knowledge management in this respect requires high level management interrelations which can lead to reduced internal competition for resources, and high level communication skills (formal and informal).

Communication emerged consistently throughout the research and communication is core to the success of knowledge management. Knowledge sharing requires multi

dimensional interaction at all levels of the organisation, internal and external, which may assist with greater understanding about what the university is or aspires to be. If the university is committed to knowledge management, then this explicitly requires improved communication systems and technology implemented in a balanced way.

Motivation and recognition for work undertaken showed significant weaknesses in the university. The advantages that knowledge management can bring to this situation once again derive from communication activities such as peer support, mentoring, coaching, action learning and broadly critical discursive opportunities, all of which can be motivating for the individual and create innovative ideas.

Staff in the University of Luton cited a creative and dynamic environment as being one they would prefer to work within, and pressure for the HEFC indicated increased innovation and value for money as an expectation of universities. Knowledge sharing contributes significantly to creativity and organisational innovation, whilst underpinning the diversification of income streams through consultancy and research income. Further, knowledge sharing at an operational level is likely to reduce duplication of effort and enhance creativity leading to smarter working practices and identifying weaknesses where training and development are required.

Training and development can be delivered in many different modes, however the perception in the University of Luton was such that time to train was difficult to find, indicating a focus on formal training sessions. The concept of knowledge management is synonymous with the learning organisation, which incorporates both explicit and implicit training and development, organisational and individual. Learning from experiences, can contribute significantly as long as the ability, appropriate contextualisation and action is taken. Changing roles, awareness of expertise – who knows what, reward and recognition should all be considered if knowledge management is to receive serious consideration.

Management competency, change management and leadership were significantly criticised in the university of Luton research with an overall perception that management

were disconnected from the rest of the organisation. Inspired leadership is a key aspect of knowledge management as is cross organisational communication horizontal and vertical, and performance. Horizontal communication often falls into a top down mode, but must be a two traffic function if it is to minimise the perceived disconnection between senior management and the wider organisation. This could then assist with the provision of adequate and relevant information for decision making at various levels and contributes to the contextualisation and understanding and acceptance of decisions.

The information aspects of knowledge management relates to business processes. Strategic management of information resources and human resources assists with effective decision making. This includes the IT infrastructure to facilitate the speed of information exchange, storage of policies and procedures and documentation that comprise organisational memory and implementation processes. Effective IT should be available to underpin this, but is not the final conclusion.

The foregoing identifies some of the key issues and characteristics of a university which are issues that a framework for the critical evaluation of knowledge management readiness would have to consider. However whilst the working definition of knowledge management has been provided for context and a brief introduction to knowledge management offered (1.1) further consideration as to the main characteristics of knowledge management in the context of these findings is helpful to provide further clarity. Chapter 4 therefore offers an overview of knowledge management with emphasis placed on knowledge management and communication, and knowledge management and learning organisations as these appear most relevant to a university.

4. AN OVERVIEW OF KNOWLEDGE MANAGEMENT

4.1 Introduction

From the previous chapter it emerged that there are many issues that should be addressed to progress a university to a competitive and responsive position in a commercialised higher educational sector. In this respect the time is right for knowledge sharing initiatives. But if such initiatives are to be anything other than ad hoc, they need to be managed effectively and efficiently, and set within a strategic context. The management of knowledge, or knowledge management, has many different connotations and meanings and this chapter, which remains within phase one of the research design as illustrated in figure 4.1.1, considers the rise of knowledge management, and explores its characteristics.

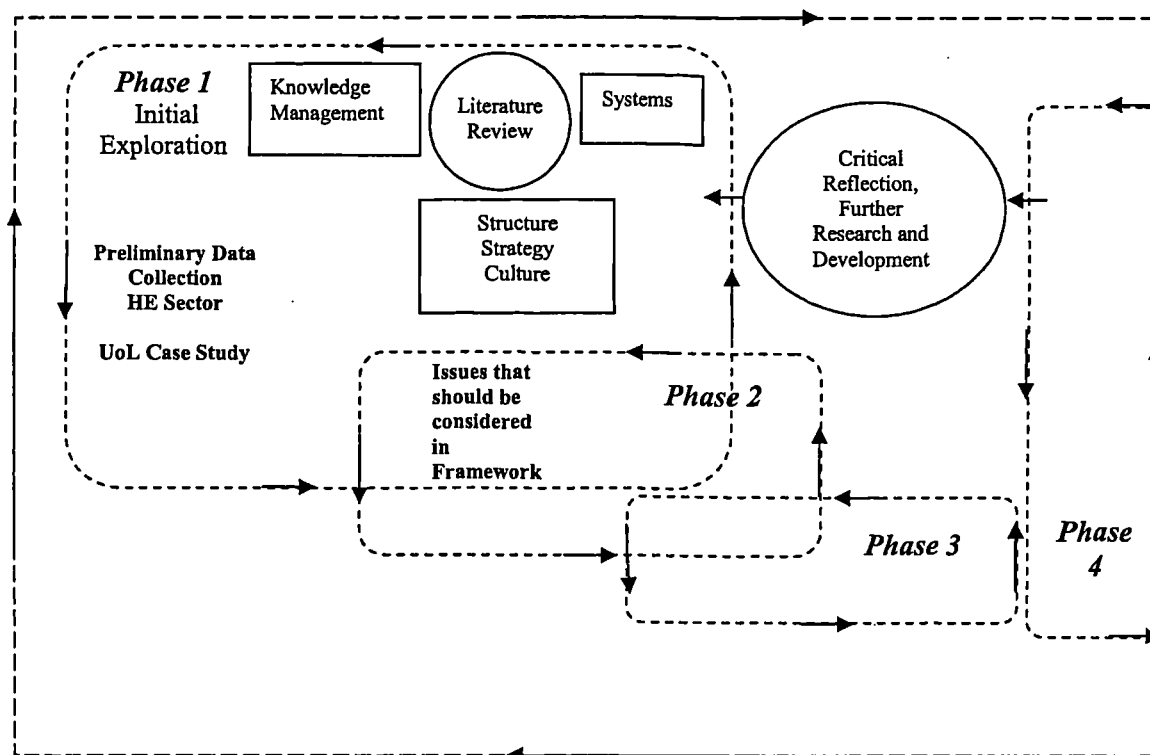


Figure 4.1.1: Research Design Phase one (adapted from figure 2.2.1) Knowledge Management.

An overview of knowledge management is provided, and the chapter concludes with a summary of knowledge management which encompasses the field, but which is also narrow enough to distinguish knowledge management from other disciplines.

4.2 The Rise of Knowledge Management

In the last decade business success and survival have become increasingly difficult to ensure, due to the emergence of a new era of organisational forms that embrace change. The emphasis is now on adaptability to the business environment and on addressing market and customer needs proactively. Organisations are evolving from traditional, “permanently” structured entities, to more fluid businesses, across a wide range of sectors. These include manufacturing (Zhang and Sharifi, 2000), healthcare (Bui, 2000), entertainment (Grant, 2000) and education (Warner, 2000). Whatever the sector, there is growing evidence to suggest that knowledge creation and retention is the key to gaining and retaining competitive edge.

There is significant evidence that knowledge management is of major importance to all kinds of organisations, and this importance is growing. A trawl of the web will result in literally thousands of entries regarding this area. Table 4.2.1 shows a range of knowledge management application areas.

Table: 4.2.1: Knowledge Management Initiatives (Source: Sveiby, 1999)

Knowledge Management Initiatives		
External Structure Initiatives	Internal Structure Initiatives	Competence Initiatives
Gain Knowledge From Customers	Build Knowledge Sharing Culture	Create Careers Based On Knowledge Management
Offer Customers Additional Knowledge	Create New Revenues From Existing Knowledge	Create Micro Environments For Tacit Knowledge Transfer
	Capture Individuals' Tacit Knowledge, Store it, Spread it and Re-use it	Learn from Simulations and Pilot Installations
	Measure Knowledge Creating Processes and Intangible Assets	
Companies		
Benetton, General Electric, National Bicycle, Netscape, Ritz, Carlton, Agro Corp, Frito-Lay, Dow Chemical, Outokumppu, Skandia Switzerland, Steelcase	3M, Analog Devices, Boeing, Buckland Labs, Chaparral Steel, Ford Motor Co, Hewlett Packard, Oticon, WM-Data, McKinsey, Bain & Co, Chevron, British Petroleum, PSL Consult, Skandia ASF, Celemi, Skandia	Buckland Labs, IBM, Pfizer, WM-Data, Affaersvaerlden, Hewlett-Packard, Honda, PLS-Consult, Xerox, National Technological university, Matsushita

There is little doubt that knowledge management has grown quickly and is set to continue to grow. There has been a wider recognition that the nature of western economies has shifted permanently from manufacturing to services, where knowledge, rather than physical assets, is at a premium (Stewart, 1997). Drucker (1993, p42) argues that "Knowledge is the only meaningful resource today. The traditional factors of production ...have become secondary. They can be obtained ... easily, provided there is knowledge". Traditional factors of production, from the discipline of economics, are land, labour, and capital. Technology tended to be added to this list from the late 1960s, but what is recognisable in Drucker's commentary is that none of these factors of production can be utilised in any sensible way without the application of knowledge. Thus it is knowledge that is key to success. Organisations recognise that technology based competitive advantages are transient and the only sustainable advantages are

employees. Indeed recent Government policy focuses greater attention on human factors than in the past (Dobson and Jowell, 1998). Such an emphasis reflects the view that “In the end, the location of the new economy is not in the technology ... It is in the human mind” (Webber, 1993, p27).

Stewart (1997, p6) supports the above by stating that “knowledge management for an organisation is critical, for knowledge is emerging as the pre-eminent economic resource above raw materials, and often money ... fundamental sources of wealth are knowledge and communication rather than natural resources and physical labor”. He adds that there is a need to couple knowledge with communication, and this emphasises that it is not just knowledge, but the sharing of knowledge that is of importance.

This growing importance is not just acknowledged by management writers, for in business this realisation is making its way into the boardroom. A survey by Breu, Grimshaw, and Myers (2000) had 576 responses from senior UK business decision-makers, with 50.4% stating that exploiting knowledge was on their board agenda. In the same survey 28.5% of companies had responded as having an organisation-wide knowledge exploitation strategy. In addition a survey by Murray and Myers (1997) found that over 89% of 100 European business leaders said that knowledge was the key to business power.

4.3 What is Knowledge Management?

Although the time is right for knowledge management initiatives, to achieve sustained competitive advantage, it must be considered beyond just the automation of manual tasks, if it is to avoid the fate of expert systems. These were used mainly in routine decision support roles, and are not seen as particularly useful by many organisations. However IT systems still appear to dominate the field of knowledge management as can be demonstrated by reviewing the Europe 2001 Knowledge Management Conference and Exhibition (27 November - 29 November). A total of 76 exhibitors attended this conference, of which 67 focussed on IT including technical consultancy, software

manufacturing, and knowledge software and associated IT systems. Nine exhibitors offered management consultancy and included the human side of knowledge management. With such emphasis on IT systems, there is a danger that knowledge management will only be seen as a technological process, but it is important to establish what is meant by the term “knowledge management”, both in concept and practice.

Knowledge management may be considered in a variety of ways. One typology is to classify knowledge management by distinguishing between tacit and explicit. Thierauf (1999) recognises that pure data would have little effect for a typical manager and structured data, as information, is useful to analyse and solve problems. Knowledge, however, is obtained from experts and is based on expert experience, as it requires a higher understanding than information alone. Explicit information comprises facts or data that is organised in a structured way, whereas knowledge incorporates values, beliefs, perspectives, judgements and know-how (Quintas et al 1997).

Allee (1997) proposes that knowledge only becomes meaningful when it is seen in the larger context of culture, which evolves out of beliefs and philosophy. From an economic perspective, Cohendet and Steinmueller (2000) assert that it is important to recognise context-dependent information as this distinguishes information and knowledge. For example, creating and reproducing conditional statements when exchanging and sharing knowledge presents problems for the codification of knowledge into information, and certain tacit knowledge cannot be reproduced anyway.

Whilst the concepts of knowledge and management are old, only quite recently have they been put together in this way. This is probably because management has been seen to be principally about clearly definable objects and processes such as finances, project management, corporate strategy etc. Those elements that did not appear on the financial returns often escaped specific attention. Even the task of managing people (human resource management) has only recently been established and often associated activities that comprise human resource management still have had difficulty gaining recognition. Thus, despite its obvious importance for many industries, the roles of the various types of

knowledge have seldom been specifically addressed in management theory and practice. Accountants normally cover it under terms such as intangibles and good will.

Failure to consider concerns, which were not accounted for in traditional financial analysis, such as the feelings of communities and the social costs of a company's actions, could result in strategic weaknesses. For example, David Snowden, presenting at the Knowledge Management Annual Conference 2000, discusses the codification of tacit and explicit knowledge in IBM. Snowden points out that whilst gathering and processing knowledge is expensive, e.g. IBM invest 5% of its total revenue into gathering and processing knowledge, he adds that "a company which did not embrace the concept might well be more concerned with survival" (Cummings 2000, p12-13), and in today's competitive environment simply surviving is not enough. Similar weaknesses may arise if firms ignore the acceptability of strategic options to key stakeholders. Stakeholders may seem relatively passive and even disinterested, but stakeholder groups tend to emerge and influence strategy as a result of specific events, such as the formulation and evaluation of potential new strategies. It is vitally important that the likely reactions of such groups, whether internal or external, are given appropriate consideration. Damaging situations may arise if their interest levels are underestimated. This is of particular concern if such groups act to thwart the implementation of a strategy that has involved time and cost to develop, and, even worse, if no sensible and acceptable alternative strategy has been formulated.

The foregoing discussions are especially important in a post-industrial society and for service organisations within such a society, and the relevance of knowledge within such organisations was recognised by Bell as far back as 1973: "Post-industrial society is organised around knowledge" (Bell, 1973). For both internal and external purposes, knowledge sharing and knowledge management within firms is important to success and competitive edge. If knowledge sharing is to occur, and if it is to be managed, it is self-evident that for the former communication is vital, and for the latter, policies, procedures, and strategies will play a key role if anything other than ad hoc communications are to be achieved. Good communications are key to knowledge management and knowledge

creation, and Nonaka and Takeuchi (1995, p3) describe organisational knowledge creation as “the capability of a company as a whole to create new knowledge, disseminate it throughout the organisation and embody it in products, services and systems”.

4.4 Knowledge Sharing and Communication

Whilst communication is regarded as key to knowledge management, it is also an essential ingredient in many management theories, from an operational and strategic perspective. For example, Dolphin and Fan (2000) discuss the importance of corporate communications and the role and function of communication executives, and the impact of corporate communications upon the formulation of corporate strategy. Peters and Waterman (1988) discuss informal communications in excellent companies and the advantages in relation to action and progress, rather than formal bureaucratic paper based communication, often found in large organisations. Accepting that communication is central to the success of knowledge management, this is both from an information theory perspective in relation to the technical domain, and constructivist perspective in relation to the people domain. Organisations often experience difficulties achieving effective communication in both domains, as demonstrated in the University of Luton case. This may be a common difficulty more often in traditional bureaucratic organisations and specifically in relation to tacit knowledge.

When thinking about classical management approaches and organisation hierarchies, communication problems primarily could be as a result of the environment and organisational structure but may also be because the concept of communication is not fully recognised and often reflects a one way process rather than an exchange or dialogue. With regard to tacit knowledge, Nonaka and Takeuchi (1995) argue that western society is too focussed on explicit knowledge, which is formal and systemic communication, whereas Japanese companies recognise and value the concept of tacit knowledge. However, they state that “tacit knowledge is highly personal and hard to formalise, making it difficult to communicate or share with others. Subjective insights,

intuitions, and hunches fall into this category of knowledge” (Nonaka and Takeuchi 1995, p8).

Formal and explicit knowledge can easily be processed by a computer, transmitted electronically, or stored in databases. By this definition, explicit knowledge tends to be hard facts, quantifiable information, policies and procedures, whereas tacit knowledge is the experience and wisdom developed as a result of using and applying hard information, whilst absorbing the internal and external environment and culture of the organisation and its industry. Nonaka and Takeuchi (1995) highlight the importance of converting tacit knowledge into explicit knowledge if it is to be of any value to a company. But this could also indicate the systemisation of people’s thought processes and wisdom, rather than valuing the workforce’s collective knowledge as well as individuality and the contribution they make to the organisation. The process of converting tacit to explicit for purposes of communication and providing value to an organisation, therefore, appears to be an idealistic concept. It could be argued that formal organisational systems are limited in scope and can not capture the culture of the organisation. Alternatively there may be methods such as the use of rich pictures that could be a useful method of translating tacit knowledge to an understandable language with aspects of knowledge converting to explicit. But still only aspects of tacit knowledge will successfully convert, as much of tacit knowledge is built on a foundation of social conditioning, values and beliefs, which form individual perspectives of the world. Alternatively, perhaps there is no need to convert the tacit to the explicit, but to manage tacit knowledge in a way that complements and implicitly contributes to the organisation. Peters and Waterman (1988, p123) recognise that there is an immense network of informal communication and open access to managers, a “virtual technology of keeping in touch”.

Whilst a communication process may incorporate a variety of techniques ranging from reports, visual identity, correspondence and E communications etc, there is no guarantee that the intended message has been received and understood. In the technical domain, often the information is more quantifiable so the same problems are less likely to arise. However, Polanyi (1966) states that tacit and explicit knowledge are not entirely

separable forms of knowledge, because all explicit knowledge has a tacit dimension. This is further highlighted when considering Watzlawick's (1968) view of communication as a broader concept than just exchanging information, but incorporating behaviour as well. By incorporating behaviour, Watzlawick's approach to communication addresses issues such as the interpretation of the intended message, intention of those delivering the information, relationship influences, the context in which the message is set, all of which clarify meaning, but still only to a certain extent. Social conditioning, cultural differences, other external influences will always impact to convert the message into a meaningful translation and context for the individual receiving, or not at all as the case may be. The continuum demonstrated in table 4.4.1 has been compiled by the author from a combination of foregoing literature.

Table 4.4.1: Continuum of Communication.

Explicit

Tacit

Hard data (IT based) organisation non-personal	Procedures, manuals either IT based or paper based organisational	Policies Written Correspondence Email Organisational/ departmental	Meetings , messages email interpersonal workgroups individual	Social semi formal smaller groups, individuals	Social informal Smaller groups, individual	Rumour, speculation story telling, legends history
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The continuum is intended to demonstrate different levels of communication with polarised concepts of hard technical information at one end of the scale and purely tacit at the other. This is not, however, intended to detract from the tacit elements of communication and thought that are implicit in all elements of communication but to highlight the difference. In this continuum, hard data refers to facts with limited scope for interpretation. All other categories on the continuum could be open to personal or contextual interpretation, and as the continuum moves to the tacit, the exchange of information and dialogue becomes more loose and intangible but not unimportant. Fineman and Gabriel (1996), for example, point out that 'story telling' is emerging as an important informal method of communication in modern organisations and is regarded as important to convey experiences of work whilst communicating shared knowledge and

learning and maintaining organisational memory (Schumacher, 1999). Smith and Irving (1997) highlight the importance of individual knowledge, organisational memory, intellectual content, and knowledge through teamwork and learning.

One significant area that relates to knowledge management generally, therefore, is communication and learning, and the role of people as possessors of knowledge. The whole concept of learning involves sharing and acquiring knowledge and from a sociological perspective, the interpersonal relationships that construct and convey meaning. Putting this in context, organisations consist of individuals and groups, which require management of complex relationships and processes that constitute or contribute to managing knowledge. Referring back to the idea of constructivist communication, to fully understand a message requires that the sender and receiver possess mutual mental models and any prior knowledge individuals possess will influence the process. Teams, however, can eventually develop a common understanding and shared knowledge, but communicating the team knowledge to those outside the team can be difficult. This raises two issues; first, operational management processes in relation to individuals in a social context, for example, Tobin (1996) points out that knowledge sharing will only be successful if the facilities and systems are easily accessible and easy to use. Second, the concept of knowledge management and complexity of communication appears to relate comfortably to the concept of systems and contingency strategic management (Mullins 1996, *see* 5.2). Knowledge management could be dependent on cross-organisational influences and interactions internally and externally, which sets the context in which knowledge is shared.

The relationship between managing knowledge and people can be difficult and contentious, because knowledge is still regarded as a personal rather than organisational commodity and is still associated with power, money and organisational politics. Eraut (1994) alludes to this when discussing the characterisation of the professional knowledge base. Eraut states “The power and status of professional workers depends to a significant extent on their claims to unique forms of expertise ... the less accessible to lay

understanding and the more individualised the client, the greater the power differential” (Eraut 1994, p 14).

The idea that organisations have knowledge is appropriate assuming that individuals remain with the organisation. However, when a member of staff leaves they take with them tacit knowledge and in some cases explicit knowledge if it has not been codified effectively. Tacit knowledge is difficult if not impossible to replace, because the individual’s contribution to the success of the organisation could have been unique to that person. Furthermore attempts to measure tacit knowledge require the organisation to understand the concept of what the knowledge is that they are looking for in the first place, for example Snowden (2000) states that about 90% of knowledge resides in the informal communities of an organisation and presents three associated heuristics:

- knowledge can not be conscripted but volunteered;
- we can always know more than we tell, after we have told it and after we have written it down;
- people only recognise what they know when they need to know it.

The foregoing puts to question the view that no one is indispensable, for example levels of dispensability may be different according to the amount of expertise and knowledge an individual has. If this knowledge is shared and transparent, then why would an individual volunteer that knowledge? Further to what extent do managers truly know what knowledge resides in their organisation and how this could be communicated effectively? These are challenges that should be considered when evaluating the readiness of an organisation to engage with knowledge management. With regard to explicit knowledge, if the organisation does not have appropriate codification and communication of explicit knowledge, again, problems emerge if the member of staff responsible for a particular area leaves and has not shared that knowledge. One approach that could be considered to address this could be found by considering knowledge management in the context of learning organisations.

4.5 Knowledge Management and Learning Organisations

Organisational learning has been described as a process by which an organisation gathers and uses new knowledge, with appropriate consideration for the tools, behaviours and values at all levels, and newly learned knowledge is translated into new goals, procedures, roles and performance measures (Bennis and Nanus 1985). Learning organisations, however, can mean different things to different people; for example one view refers to the organisation as a whole i.e. Senge (1990). An alternative view makes reference to all of the individual systems and subsystems of learning throughout the organisation. For example, Davis and Davis (1998) discuss learning in organisations that operate in fast changing environments, focussing on the importance of learning, conceptualisation of training and development and maximisation of learning. Senge (1992) introduces the concept of the learning organisation being that of a collective capacity to learn at all levels of the organisation rather than a top down directive for individuals to act on specific orders. Such collective learning requires trust and interdependency among teams with individual strengths compensating for individual weaknesses. Senge (1992) explains the difference between learning organisations and traditional organisations through five main principles:

- systems thinking which is events and actions that influence each other beyond individual learning horizons and the awareness that decisions can impact right across the organisation, both present and future. In addition there is understanding about individual ability to change working patterns to improve the organisation;
- personal mastery which relates to the level of proficiency and in this case individuals are usually committed to lifelong learning to clarify and deepen personal vision, developing patience and seeing reality objectively;
- mental models which are “deeply engrained assumptions, generalisations ... pictures or images that influence how we understand the world and how we take action” (Senge 1992, p8). To work effectively with mental models requires increased self awareness of our internal pictures of the world and to carry on

“learningful conversations that balance inquiry and advocacy, where people expose their own thinking effectively and make that thinking open to the influence of others” (Senge 1992, p9);

- building a shared vision which requires leadership in an organisation that binds people together and establishes a common identity and sense of purpose. This involves revealing or converting shared pictures of the future to cultivate positive commitment rather than reluctant compliance;
- team learning which requires effective communication i.e. dialogue and collective thinking because collective intelligence exceeds the intelligence of individuals in the team. The skills to achieve such team working include recognition, respect, trust and confidence.

Comparing Senge’s five principles to Quinn et al, (1996, p72) synergy can be seen in relation to knowledge types:

- cognitive knowledge which is the basic mastery of a discipline and relates to personal mastery;
- advanced skills, which are beyond book learning into practical execution and could be connected with mental models;
- systems understanding which is a deep knowledge of cause and effect, the ultimate expression of which is intuition. Again this could be linked to mental models and that which is beyond the ‘learning horizon’;
- self motivated creativity which is the will and motivation to succeed.

Quinn et al’s typology of knowledge however does not include management approaches that would build a shared vision and strengthen team work, both of which influence knowledge sharing.

Management in learning organisations differs from management in traditional organisations; for example, common management practice in traditional organisations looks outward and relates to practical skills (Jack 1999). Management in learning

organisations focuses more on how individuals think, what they truly want and how they interact and learn with one another. (Senge 1992). Learning provides the opportunity to create and recreate, change one's external perception of the world and relationship with it and extends individual ability to be creative. Senge (1992) states that there are two aspects to this: "Adaptive learning" which is about survival and "Generative learning" which enhances one's ability to create. The ability of the learning organisation to draw out and retain knowledge is determined by the organisational structure and culture, and the ability of its people to recognise what they know and the way(s) in which they know. Cohen and Levinthal (1990) discuss absorptive capacity' which is the individual recognition, sharing and assimilation of knowledge. The ability of individuals to absorb knowledge collectively impacts at an organisation level, however, decision-making processes and communication will determine how effective this is likely to be at an organisational level. Cohen and Levinthal (1990) state that organisations with a low absorptive capacity will have difficulties in managing their internal and external communications and knowledge flows.

Tobin (1996) discusses the knowledge network in relation to transformational learning, focussing on artefacts such as inventories of knowledge assets, i.e. data bases which provide the organisation with information about internal and external knowledge bases, learning resources and tools database, individual and group learning facilitation. With regard to group learning facilitation, Owen (1997, p16) states that "if the issue is the future of the corporation, and the people are willing to admit that they just do not know the answer, collaboratively they have a shot at creating a viable solution". Brown and Duguid, (1991) indicate that doing to learn, informal learning and sharing can contribute to the successful functioning of organisations, and may help maintain organisational memory and continuity.

The foregoing and previous sections highlight that organisations have various resources and capabilities, based around the individual and collective human resources and learning, with internal and external influences. Key issues to emerge include cross-organisational working in people and service-based organisations. The concept of the

learning organisation can provide individual and collective contribution to improve performance, engendering the trust and interdependency among teams to achieve higher outputs. This involves knowledge sharing from, and influences on, the workforce at all levels and experiences within the organisation and management recognition of the intellectual capital therein.

4.6 Intellectual Capital

The concept of intangible assets has become an important issue as organisations increasingly become knowledge driven. Research, development and innovation policies and education and training policies should include actions aimed to stimulate innovation, creativity and the competitive development of organisations through investment in intangibles.

Whilst traditionally, strategic management viewed organisations as a compilation of physical and human resources and systems, the main objective related to profit maximisation, however with the increase in service organisations and focus on human resources, human assets are now considered as a key resource. Since 1994, the European Commission (EC) has launched a series of studies, actions and projects that aim to better understand the knowledge economy and the importance of intangibles as competitiveness factors. One example of this was a workshop that took place in November 1999 Helsinki entitled "Intellectual Capital / Intangible Investments: How much is your business worth?" The main issues to arise were:

- industry is aware that knowledge management is a key factor for business value but at present there is a need for indicators to measure the performance of a company;
- this problem transcends all aspects of business management (accounting, corporate investment, disclosure of information and aspects of economic management, etc.), and needs to be tackled on an inter-disciplinary basis;
- it is very urgent to recognise at a policy level the need to invest more in

intangibles (research and development, innovation, training and marketing) in all sectors.

(Liikanen 1999)

Fundamentally, the EC tends to consider that policy makers should take stock of business evolution by defining new objectives and instruments for industrial policy. The ability to manage the intellect of human resources, including creativity and sharing of knowledge, has a direct impact on the maximisation of the organisation overall, not necessarily to be realised in the tangibles of the profit margin, but the overall market value of the organisation. Quinn, Anderson and Finkelstein (2000) highlight the importance of managing intellect to convert it into useful outputs. They define intellect as including:

- cognitive knowledge;
- advanced skills;
- system understanding and trained intuition;
- self motivated creativity.

Intellectual capital includes organisational and individually accumulated knowledge, ability, skill and expertise. Individuals, however do not necessarily possess the skills that incorporate everything, therefore the manager's challenge is to "fully understand how their actions affect other elements of the organisation or how to improve the total entity's effectiveness" (Quinn, Anderson and Finkelstein 2000, p 507).

Allee (2000) describes intellectual capital as including people, processes, structure and the customer:

- the customer represents external capital i.e. "relationships with customers, strategic partners, suppliers, investors and communities";
- human capital comprises the "individual capabilities, knowledge skills, experience and problem solving abilities that reside in people in the organisation";

- structural capital includes the “systems and work processes that leverage competitiveness, including IT, communication technologies, images, concepts and models of how the business operates, databases, documents, patents, copyrights and other codified knowledge.”

(Allee 2000, pp18-19)

From this perspective, managing knowledge should be on the strategic management agenda to achieve exceptional performance and sustainable competitive advantage and to use knowledge efficiently and rapidly rather than rely on particular products or technologies, which, although tangible, can be easily imitated. Intellectual capital is difficult to measure. Whereas physical assets are stable and consistent and can be accurately valued and depreciated, intellectual capital can not be accurately valued and can appreciate as well as depreciate, therefore physical assets provide a less complex system of valuation. It has long been recognised that the value of a company depends on a range of assets whose replacement costs cannot be easily calculated, for example the workforce. Traditional accountancy procedures differentiate between tangible and intangible assets, and intellectual capital represents all the assets of a company not represented on a balance sheet. Renewed emphasis on information or knowledge assets, intangible assets and intellectual capital has resulted in virtual companies achieving valuation many times over of their physical base.

Traditional accounting procedures are less able to account for production that includes knowledge capital, intellectual capital and intangible assets. This view is supported by Allee (2000, P29) “Our financial accounting systems do not illuminate diversity but drive toward conformity. Intangibles offer us the chance to profile, analyse, understand and appreciate the difference of one company from another.” To succeed this requires organisations to consider the value added elements of organisations within the social domain and such consideration is progressing. Harrison and Sullivan (2000) provide an update on current best practice and the evolution of intellectual capital management reporting on the values, roles and optimisation of intellectual capital. Liebowitz and Suen (2000, pp54-67) introduce knowledge management metrics for measuring

intellectual capital, recommending that organisations should undertake intellectual capital audits to “consolidate the knowledge management field and give the discipline further credibility”.

4.7 Conclusions

This chapter explored various aspects of knowledge management, establishing that business success, the new era of organisational forms and the continual changing environment require new approaches to management. The emphasis is now on adaptability, addressing market and customer needs proactively and a shift away from traditional, “permanently” structured organisations, to more fluid businesses. Knowledge management is seen as essential to the survival of organisations, to capture the creativity, sharing and utilisation of knowledge and expertise, that provides an organisation with competitive edge.

As was demonstrated in 3.3.3 and 3.4, communication is regarded as key to knowledge management, it is also an essential ingredient in many management theories, from an operational and strategic perspective. Improving technologies provide opportunities for increasing information exchange, but much organisational knowledge is tacit, and can not so easily be transferred electronically. The literature also assumes that organisations can engage and use the ideas behind knowledge management, but fails to consider the position the organisation is in. For example, as is often the case, communication should not be regarded as just electronic information exchange, but a dialectic and critical process. The critical discursive process distinguishes information exchange from knowledge sharing because the emphasis shifts from non-action to learning, understanding and consideration of variable solutions, which can impact horizontally and vertically throughout the organisation and require competent management of interrelationships.

The relationship between managing knowledge and people can be difficult and contentious, because knowledge is still regarded as a personal rather than organisational

commodity and is still associated with power, money and organisational politics. There are approaches, however, that may reduce some of the obstructions to sharing knowledge, which include the concept of intellectual capital or intangible asset management. The concept of intangible assets has become an important issue as organisations increasingly become knowledge driven. Research, development and innovation policies, education and training policies should include actions aimed to stimulate innovation, creativity and the competitive development of organisations through investment in intangibles. Intellectual capital includes organisational and individually accumulated knowledge, ability, skill and expertise. Individuals, however do not necessarily possess the skills that incorporate everything, or have the opportunity to express themselves. Management challenges, therefore, are changing in relation to teamwork, organisational structure, communication and collaboration and ability of the organisation to learn.

This research explores the foregoing issues further from a holistic critical perspective. A holistic approach to knowledge management requires broad consideration as discussion in this chapter demonstrates. Examples of issues include the need for a definition of knowledge management, because without a realistic and feasible vision, committed to by senior management, the organisation will not be able to create 'buy in' from the workforce to implement. Capturing current knowledge is important because unless the organisation has a structured and coherent approach to the capture, storing and sharing of knowledge then the concept of knowledge management remains ad hoc and it could be argued that it is not be managed at all. The right knowledge sharing culture is essential because any kind of framework can be introduced to an organisation, but if the culture of the organisation is such that cross organisational sharing and learning is inhibited, the framework is less likely to be successful unless culture is assessed. These are some examples of organisational type issues that could be considered in a framework to evaluate an organisation's readiness to engage with knowledge management.

The literature review, however, does not indicate any holistic underpinning theory as such and does not recognise the need for knowledge management to be treated as a strategic issue. Appendix 3 explores management and organisation strategy and structure

and reviews management development, traditional structures and culture in view of knowledge management. From appendix 3, it is evident that the development of organisational management theory is relevant to knowledge management. It is worth noting the advantages of systems and contingency, because of the recognition of influencing variables, ranging from the human to technical to environment. This helps demonstrate synergy with the concept of knowledge management and thus leads to considering the organisation as a system and reinforces the relevance of taking a systems approach to the development of a framework. Current management practice, however, is still very much classical, and this could be perceived as an obstruction to KM. A soft systems approach should help address this issue.

Appendix 4 discusses Soft Systems Methodology (SSM) demonstrating the depth of theoretical and methodological underpinning that a knowledge management framework can gain from SSM. The research focuses on human situations in a university in the context of knowledge management and as such is faced with social complexity, ill structured and strategic problem situations, therefore requiring a logical approach to investigation and intervention by way of a framework to evaluate a university's readiness to engage with knowledge management.

Emphasis is placed on the analyst to ensure appropriate participation and maintain the ethos of SSM in action. It also indicates the need for senior management commitment to the overall exercise. Initial casework undertaken in the University of Luton (chapter 3) highlights the need for senior management commitment and leadership as does the literature review into organisational management (appendix 3), again confirming the benefits of SSM.

SSM extends beyond the logical investigative process incorporating social systems analysis and points to a fully participative investigation. The focus of SSM in terms of outcome is based on learning to improve, holistic systems thinking, relationship handling and an action research paradigm. The holistic systems thinking identifies the component parts that may be meaningful to one level of a hierarchical system, but combined, they

contribute to the overall system and the dynamics within. Similarly, universities from a loosely coupled systems perspective, or systems and contingency perspective with multi variate interrelations can be considered in a holistic way. Considering the detailed discussion relating to SSM (appendix 4) and organisational strategies, structures and culture (appendix 3), figure 4.7.1 illustrates the structure of a potential framework:

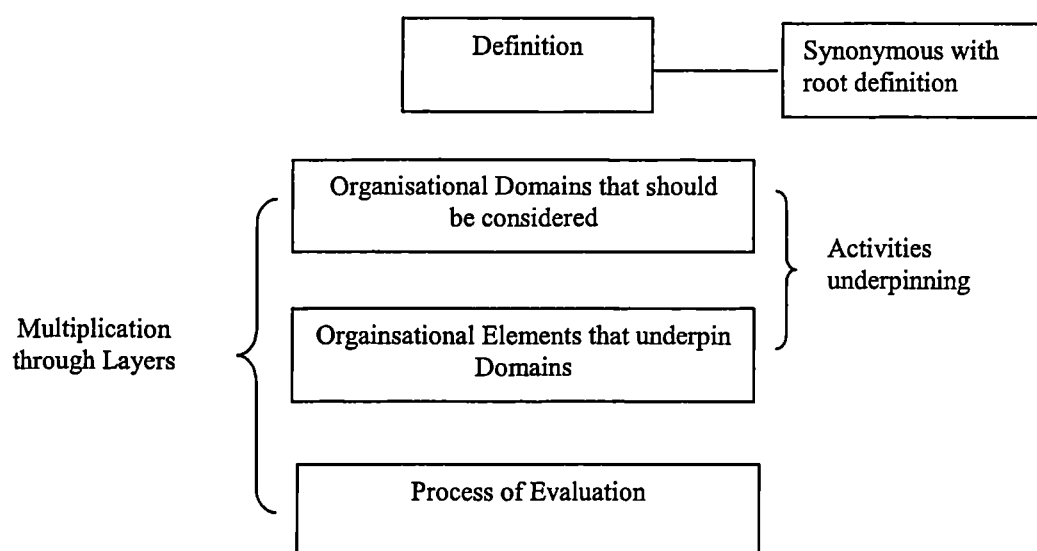


Figure 4.7.1: Potential Knowledge Management Framework Structure

Although some issues for consideration of the content of a framework have been identified through empirical research, in keeping with SSM some indication of current frameworks available is necessary to establish whether there already exists a framework that addresses KMR and to draw on good practice from previous work undertaken in this area overall. Chapter 5 therefore contains this exploration undertaken through desk top research.

5. A REVIEW OF KNOWLEDGE MANAGEMENT FRAMEWORKS

5.1 Introduction

This research is concerned with developing a framework for the evaluation of an organisation's potential to engage in knowledge management (an organisation's 'KM-readiness, or KMR). To recap, Chapter 3 offered background information and empirical evidence of issues that need to be considered in organisations, chapter 4 provided an overview of knowledge management, and appendix 3 explored organisational structures, strategy and culture in the context of knowledge management. Discussion thus far would not be sufficient to provide a robust and reasoned framework, therefore this chapter provides a comprehensive review of published knowledge management frameworks that purport to address evaluation, implementation, and other connected areas and is intended to accumulate some further and more focussed ideas as to what should be in a KMR framework. Figure 5.1.1 illustrates this next phase of research (phase 2) within which this chapter forms a substantial part.

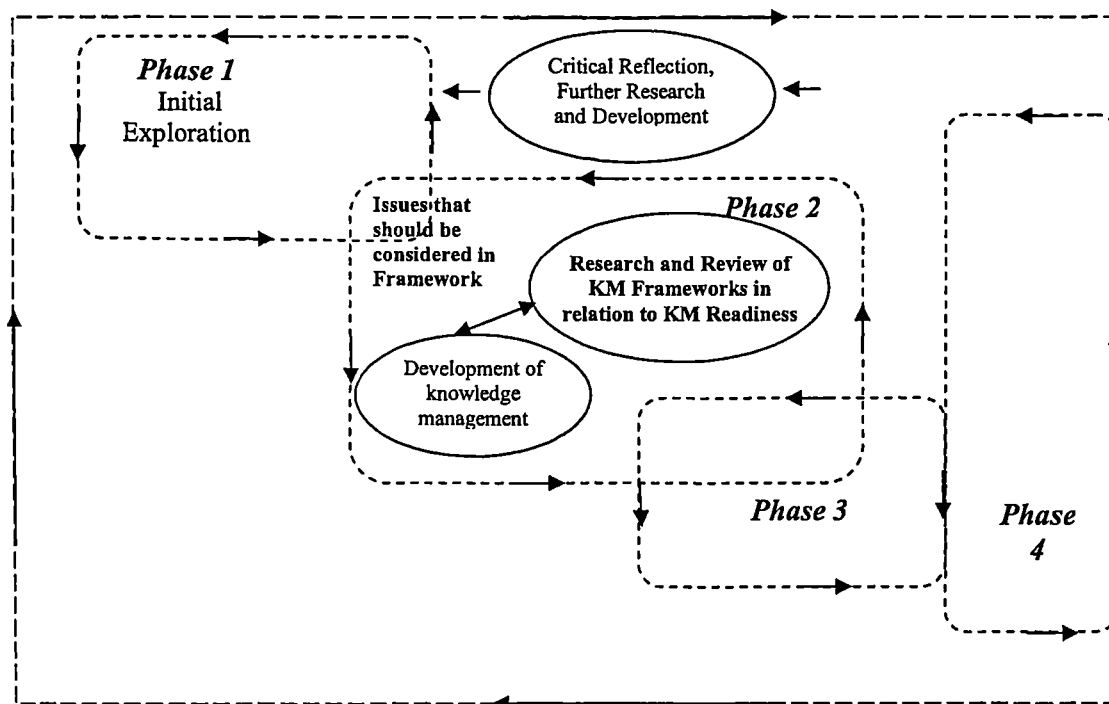


Figure 5.1.1 Research Design Phase Two (adapted from figure 2.2.1) - Review of Knowledge Management Frameworks.

Before continuing it is important to set this exercise in context. The review of frameworks is distinct from a review of literature in which the frameworks are presented. The latter is not intended here. For example, a review of a paper may involve a comprehensive critique, which includes exploration into the general area of research, clarification of the hypothesis, detailed examination of research methods and methodology, literature review, and comprehensive examination of data representation and quality. Such a review would consider the presentation of the paper, and it would critically reflect on the overall purpose of the paper and contribution made to new knowledge, either conceptual or practical. This review focuses solely on the frameworks presented in a paper and in particular those that may address evaluation of knowledge management in an organisation.

This review is important in two major ways, both of which form the key objectives:

- first, by showing that there is no single existing framework that addresses KMR, gaps in concepts and practice are highlighted. This helps to demonstrate that a new framework for the evaluation of an organisation's potential to engage in knowledge management will contribute to knowledge and the shortfall is clearly demonstrated in this chapter;
- second, the review highlights useful elements and concepts that ought to be in the framework being developed and this is also achieved.

Over 3,000 papers were found by means of the usual search methods. From these, based on titles, abstracts, and keywords, a total of 267 articles were identified as having potential relevance to this research. However, 107 of these focus solely on technology and technical aspects of information, and these were not considered suitable for the purposes of this research. The remainder of the papers were considered in more detail, and eventually 35 papers were considered to have frameworks of kinds that were worth serious evaluation.

The approach taken to this review is a qualitative interpretivist approach and as such specific issues require attention, such as reliability and validity. For example, Decrop (1999, p158) states that methodological introductions are “mostly limited to describing the research design or mentioning reliability and validity criteria, but without showing how these criteria are implemented”. In an attempt to address such issues, this approach has been structured carefully by establishing the criteria up front and offering as consistent, systematic, transparent, and valid a review as possible, involving a three-stage process:

1. the establishment of a set of key words to conduct the initial search;
2. an initial review of knowledge management frameworks and a process of elimination;
3. a systematic review of the remaining and most appropriate frameworks with the help of an evaluation grid that has been developed as part of this work.

5.1.1 How the establishment of a set of key words used to conduct an initial search was undertaken

There are many euphemisms that might be used for the word 'framework'. These include process, approach, method, methodology, procedure, system, scheme and structure amongst others. Similarly the word 'evaluation' has many alternatives, and frameworks that address implementation, for example, may have a lot that could contribute to the process of evaluation. In order to avoid missing relevant frameworks, a set of euphemisms and variants was developed for the literature search (see appendix 5). The literature search includes books, journals, conference papers, and web-based materials.

5.1.2 How an initial review of knowledge management frameworks and a process of elimination was undertaken

An initial review of knowledge management frameworks and process of elimination was conducted to maintain focus and to avoid lengthy reviews of frameworks that were clearly not relevant, or of frameworks that are so embryonic that there is little to review. For example, after a review it may be discovered that a framework is clear in structure, methodologically robust, theoretically and empirically underpinned. However, if it addresses only one aspect of knowledge management (such as technology for example), it offers very limited possibilities in terms of evaluating an organisation's overall potential to engage in knowledge management. The latter is the purpose of this review, and as far as it has been possible, only papers that address this area were selected for the next stage of more detailed review. Some approaches may be too simplistic or too theoretical and fail to offer a reasonable and coherent set of activities in any connected form that could be described as a framework (triviality criteria). Such papers were purposely excluded from the structured review.

5.1.3 How a systematic review of the remaining and most appropriate frameworks with the help of an evaluation grid that has been developed as part of this work was undertaken

Papers that presented a framework that focused on, or that contained associated concepts and elements that may be helpful in evaluating the extent to which an organisation is Knowledge Management Ready (KMR), and that did not fall foul of the triviality criteria (from 2 above), were subjected to a third level review. Such frameworks may not necessarily be designed explicitly, specifically, or solely to evaluate an organisation's KMR, but they appear to be directed toward assisting managers to evaluate their organisation's current situations and to suggest what might be addressed in order to introduce knowledge management into the organisation. This third level review is a systematic, structured and consistent process undertaken with the help of the Generic Review Grid shown in Table 5.2.1.

This grid has been developed as part of this research and forms a major part of the review. It is intended to help offer an easily comparable and accessible review that is as consistent, objective, systematic, transparent, and valid as possible. To achieve this, the categories against which the review is conducted are established up front and specific criteria, identified by Lincoln and Guba (1985, in Decrop 1999, p158) taken into consideration. Lincoln and Guba established four criteria that should be addressed when undertaking qualitative research:

1. credibility (internal validity): How truthful are particular findings;
2. transferability (external validity): How applicable are the research findings to another setting or group?;
3. dependability (reliability): Are the results consistent and reproducible?;
4. confirmability (objectivity): How neutral are the findings (in terms of whether they are reflective of the informants and the inquiry, and not a product of the researcher's biases and prejudices)?

Applying these criteria specifically to the grid, credibility (internal validity) has been achieved through the process of evaluation on an individual basis and according to each cell and the categories identified. Transferability (external validity) was introduced in two ways, first by iteration and comparing the outcomes of individual frameworks at a collective level within the scope of the overall review, which then provided more dependability, ensuring that the measures used were consistently applied in the broader sense. Second by exposing the grid and findings to critique at a workshop conducted at Lincoln University, (7 February 2003). Feedback during this workshop indicated that the grid could be applied to other types of research and the findings in this case seemed consistent and if undertaken by another could be reproduced as long as the objective remained consistent. Confirmability was addressed through iteration and by reviewing the overall exercise with external input from practitioners and critique at the KMAC conference Aston (2003). Discussion at this conference highlighted that it is impossible to achieve a totally objective approach because a professional bias has to be maintained to achieve the objectives of the exercise. However, it has been possible to reduce personal biases and prejudices achieving a more neutral approach than would otherwise be the case. The following section provides further detail of the grid and how it was used.

5.2 Generic Review Grid for Knowledge Management Frameworks

The left-hand column identifies elements that were considered when reviewing the frameworks and assists in understanding the structure of proposed frameworks and how they have been developed. The elements are purpose; process; activities; development and testing. These were established through an initial literature search to clarify the areas that knowledge management frameworks include and represent key significant strategic elements or concepts that would be expected to be found in most systematic approaches to knowledge management. Development and testing has been included because without appropriate development and testing, a framework may not achieve what it is intended for. The row headings help to evaluate the credibility and quality of the elements in the left-hand column that are considered in the frameworks and these are explicitness, clarity, reasoning, theory and empirical work.

Table 5.2.1: Generic Review Grid for Knowledge Management Frameworks

Score Key	1 = lowest possible score 5 = highest possible score				
Total Score	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	<i>Has the purpose of the framework been explicitly stated?</i>	<i>Has the purpose been discussed with clarity?</i>	<i>Is there reasoning to support the purpose of the framework?</i>	<i>Is there theoretical underpinning to support the purpose of the framework?</i>	<i>Is there empirical underpinning to support the purpose of the framework?</i>
Process	<i>Is the KM process explicitly stated?</i>	<i>Has the KM process been presented with clarity?</i>	<i>Is there reasoning to support the KM process?</i>	<i>Is there theoretical underpinning to support the KM process?</i>	<i>Is there empirical underpinning to support the KM process?</i>
Activities	<i>Are KM activities explicitly stated?</i>	<i>Have the KM activities been presented with clarity?</i>	<i>Is there reasoning to support the KM activities?</i>	<i>Is there theoretical underpinning to support the KM activities?</i>	<i>Is there empirical underpinning to support the KM activities?</i>
Develop & Test	<i>Is it explicit that development and testing has been undertaken?</i>	<i>Have the methods of development and testing been presented with clarity?</i>	<i>Have the methods of development and testing been reasoned?</i>	<i>Has development and testing been theoretically underpinned?</i>	<i>Has development and testing involved empirical evidence?</i>

The grid was applied by considering the frameworks being reviewed in the context of each cell and by cross referencing and asking the relevant questions, scores were then applied. Each individual cell is scored according to the extent to which the requirements of the cells have been met. The score key is based on a simple 1-5 Likert scale. A score of 1 shows that the specific cell was considered to be extremely poor in regard to the criteria indicated and a score of 5 shows that the specific cell fully met the criteria. The highest possible score per framework is 100, the lowest possible score is 20. It is important to recognise here that if this is to be conducted in a constructive and critical manner, then it is important to ask the right questions in each cell, as Ulrich (2003, p326) indicates “it is usually better to ask the right questions without having the answers than to have the answers without having asked...competence depends more on the questions we

ask than on the answers we find". The following describes and explains the cells and applications in more detail.

Purpose

The purpose is to some extent self-explanatory because without purpose it is questionable as to why a framework would be proposed. By clearly stating the purpose of the framework, this ensures that the reader or potential user understands the overall objective.

Knowledge Management Process

There may be diverse approaches to knowledge management process and different terms used for example strategy, stages, system, and elements. Recent discussion on the 'Knowledge Forum' highlights this further (Husig, 10 March 03 Processes and Knowledge). Husig recognises that there are different understandings of the term process and explicitly defines knowledge management process as an integral part of the organisation's business process. Knowledge management process is defined as the broad linkages within which knowledge management operates and has been selected to determine the extent to which a framework has been structured.

Knowledge Management Activities

Knowledge management activities are the actions that are taken within the process and here it was important to identify the distinction between process and activities, because the interchangeable use of the terms process and activity can cause confusion about the structure and layers within a framework. For example, as with knowledge process, activities may also be referred to in different ways, for example some frameworks may have strategy as the process, and processes as the activities. By exploring this further using the grid, helps to organise variable language about the frameworks into a logical structure for consideration.

Development and Testing

Development and testing is important in establishing the extent to which a framework has been developed and its readiness to be used following testing and validation. If appropriate testing has not been undertaken, the framework may not achieve what the author purports the purpose to be, and therefore remains conceptual or aspirational.

Explicitness

Explicitness explores the extent to which the different elements are presented intelligibly, so that the reader or potential user can distinguish what the framework's purpose is and the extent to which the elements have been clearly stated.

Clarity

Clarity relates to ongoing discussion about the different elements of the framework and measures the extent to which discussion is transparent and well structured; for example, this relates to how and where the elements of the framework might be used, which increases understanding, confidence and the ability to apply or adapt the framework independently and successfully.

Reasoning

Reasoning is intended to establish the rationale behind the chosen elements of the framework and measures the extent to which the elements have been discussed with justification and with effective use of literature. If well reasoned, the discussion about the framework answers how and why questions that users may have when attempting to understand the ethos behind a framework.

Theory

Theory may be drawn from any area as long as it is relevant and appropriate to provide principles of analysis or an explanation of the elements of the framework. If properly justified and referenced, theoretical underpinning can provide a more robust structure and foundation for each aspect of the framework.

Empirical

Empirical underpinning relates to the extent to which the elements have been compiled and tested by some form of evidence drawn from 'real world' experience. For example, survey research to consider what process or activities could be included, and the application of the framework to a given organisation to test fitness for purpose.

5.3 Frameworks Review

Abou-Zeid ES (2002)

Purpose

The purpose of this model is explicitly stated and discussed with clarity and reasoning to provide a basis for identifying the processes to be supported by any Knowledge Management Support System (KMSS). It was developed in recognition of a paradigm shift in knowledge management, which has been divided into three key areas:

- from regarding knowledge as a commodity to knowledge creation and recreation;
- from the management and technical approach to an enabling and social approach;
- from knowledge as being possessed by people to knowing, which is associated with acting and doing.

The model, known as the Knowledge Management Reference Model (KMRRM) is intended to provide a comprehensive framework that transcends these three areas. The KMRRM consists of a three layered approach to knowledge management systems in an organisation. The three layers are cognitive domains, functionality and resources, with an additional conceptual construct used to model the constituents of the functional layer. There is no reference to theory and empirical work at this stage.

Knowledge Management Process

The knowledge management process is made explicit and referred to within the three layers. The cognitive layer relates to the organisation's cognitive domain and all possible

relationships both internal and external. The external cognitive domain includes customers, suppliers, partners and competitors. The internal cognitive domain is the set of all things that relate to organisation and includes business purpose, processes, outcomes and rules.

The functional layer explicitly refers to knowledge management process and comprises two comprehensive categories. These are the knowledge manipulating process and knowledge enabling process. The knowledge manipulating process is described as the process that would lead to change in the current state of a 'K-thing'. Simply explained, a K-thing relates to knowledge that is, for example, identified or required by the organisation. The knowledge manipulation process includes activities such as knowledge identification, generation, elaboration, preservation, mobilisation, presentation, and evaluation. The knowledge enabling process relates to cultural and organisational issues and includes inculcating the knowledge vision, managing conversion, mobilising knowledge activists, creating the right context, globalising local knowledge.

Knowledge management resources include the organisation's ICT tools that support the knowledge manipulating and enabling process, however these have not been specifically included in the model. This illustrates the author's priority in relation to knowledge management, particularly because an explanation is offered indicating that technology should support and keep track of work, provide customised solutions for individuals and groups, and use language that relates to the organisational knowledge. In this sense it can be viewed as an enabling process or activity, which is dynamic and flexible to support knowledge manipulation. There is no indication of theory or empirical work in the establishment of process.

Knowledge Management Activities

Knowledge management activities are clearly referred to as the activities that underpin the process as indicated above. Additional examples in relation to the knowledge manipulating process include knowledge identification such as determining the

knowledge gap by comparing need with existing knowledge, assessing the knowledge and activity to convert it and identifying internal and external resources.

With regard to knowledge enabling processes, activities are made explicit, for example the process of cultivating or inculcating the knowledge vision, which includes activities such as developing mental maps of the environment in which the organisation exists and setting normative, operational and strategic goals.

There is no empirical evidence to underpin the choice of activities and no reference to theory.

Development and Testing

The KMRM has been developed based on a robust review of literature and varying approaches to knowledge management. There is some ambiguity in relation to development within a real organisation, for example, testing of the model seems to be a retrospective application in Matsushita's "Home Bakery", previously used as a case by Nonaka and Takeuchi (1995). The author does not indicate whether the case was revisited in reality or used conceptually, therefore it may be empirically weak. Although this appears to be a systems approach to modelling knowledge management, this has not been explicitly stated, nor is there any apparent theoretical underpinning.

Results and Conclusions

The author concludes that the proposed KMRM provides a basis for developing a hybrid descriptive and prescriptive model for knowledge management systems. The prescriptive element identifies knowledge processes and different ways an organisation can engage. The descriptive element offers an opportunity to characterise organisational knowledge and the connection between manipulating and enabling processes. The model achieves this understanding.

Summary

The purpose of this model is explicitly stated and discussed with clarity and reasoning using a broad review of previous and current knowledge management literature. The knowledge management process and activities have been clearly presented and structured. Although the authors appear to have taken a systems approach to knowledge management, this has not been explicitly stated, nor is there any theoretical underpinning. Use of the framework has been illustrated by application to a previous case study (Nonaka and Takeuchi, 1995). However, this is ambiguous in that there is no indication as to whether this has been undertaken retrospectively and is therefore conceptual, or whether the framework has been freshly applied in the present by revisiting the organisation and undertaking action research to test the framework.

This model contains a level of evaluation of the organisation in relation to knowledge identification by determining the knowledge gap between what exists and what is needed by the organisation. Although it does not address the organisation's overall readiness to engage with knowledge management it is useful to draw from this model when developing an evaluation framework.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 66	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	1	1
Process	5	5	5	1	1
Activities	5	5	5	1	1
Develop & Test	4	3	4	1	3

Achterbergh J, Vriens D (2002)**Purpose**

The model presented here is based on Beer's (1979) Viable System Model (VSM) which is applied to knowledge management to support the diagnosis, design and implementation of knowledge processes, and therefore provides the theoretical underpinning for this model. The purpose is clear in that the VSM is intended to make and maintain viable knowledge. The authors set the model in context by highlighting two specific areas that should be addressed in an organisation. The first is to establish what kind of knowledge an organisation needs to remain viable. The second is how to manage knowledge to address these issues. Although the purpose is clear, discussion is disjointed and it is not until after significant discussion that the reader or user deduces that the model is divided into three core elements, which illustrate the overall structure.

Knowledge Management Process

Three core elements that identify the structure and contain the process are:

- five functions that comprise the VSM;
- knowledge domains which contain activities to meet the requirements of the five functions;
- Knowledge processing which includes generating, retaining, sharing and applying knowledge.

The knowledge management process is referred to in the context of producing or processing viable knowledge and includes generating, retaining, sharing and applying knowledge. The process is cross-referenced, using a matrix, with the five functions of the VSM and associated activities (discussed further under knowledge activities).

Dependency diagrams are used to illustrate the relationship between viable knowledge and the knowledge process, highlighting where viable knowledge is generated, shared

and applied between functions. Management of viable knowledge is discussed which includes diagnosing the knowledge process to ensure that various elements are effective and efficient and whether the technological, social and infrastructure domains are suitable for processing viable knowledge. As indicated in the foregoing, theoretical underpinning is derived from the VSM. There is no indication of empirical work at this stage.

Knowledge Management Activities

The authors explicitly refer to knowledge management activities within the context of Beer's (1979) five functions necessary for organisational viability. Each function of the VSM is considered as an activity that requires knowledge as a background to solve a specific system related problem. This includes evaluation of performance and signals in relation to goals, perceived facts and gaps and the necessary action to achieve positive outcomes. The VSM is an iterative and layered model that deals with relations between functions and relations between different levels of iteration. Organisations are considered as social systems and communication links the five functions of the VSM. The five functions are:

- Organisational Primary Activities, which are the core activities of an organisation that demonstrate its main reason for existence. Each department or business unit of an organisation needs knowledge about organisational goals and other business units or departments goals. In this sense, the four functions that follow below ensure synergy of primary activities and a holistic approach to safeguarding the viability of the organisation;
- Co-ordination ensures that the interdependencies between primary activities are managed through planning, quality standards meetings and so on and knowledge about business units or departments is needed to evaluate the loss of performance;
- Control relates to the current goals of the organisation and includes activities such as monitoring whether the goals are achieved through direction to and reports from managers and auditing procedures, and reviewing new proposals to assess the potential for change;

- Intelligence ensures that the activities of the organisation are aligned with environmental developments and is based on knowledge about the environment including trends, changes or other initiatives that could be adapted to meet new organisational goals;
- Policy relates intelligence to control ensuring that the organisation defines its identity in such a way that fits developments in its environment. This includes activities such as reviewing new proposals for innovation and balancing discussion about adaptations necessary to achieve results.

As indicated theoretical underpinning is derived from the VSM and there is no indication of empirical work at this stage.

Development and Testing

Development of the model is clear and well reasoned. The authors review knowledge management concepts, processes and instruments and definitions of knowledge and apply Beer's (1979) VSM relating this to domains of viable knowledge using a case study to demonstrate the application of the model. Through the case study, the authors illustrate how the application of the VSM can organise and define activities to establish a system of knowledge management. Empirical work is limited to one company and there is no methodology to explain how the VSM was applied to the company. Descriptive examples are offered, with little analysis of the empirical work.

Results and Conclusions

The authors conclude by highlighting what the model is capable of achieving in terms of managing viable knowledge and draw out the benefits and importance of a systems approach using the VSM. They emphasise that by using the VSM provides a theoretical contribution to knowledge management. The model is regarded as generic and can therefore be applied to any organisation or organisational goals.

Summary

The purpose of this model is clearly stated, and theoretically underpinned using the VSM. The functions and activities in the model are well reasoned and dependency diagrams help to illustrate the relationship between functions and knowledge process. The knowledge process is clearly stated, as the actual management of viable knowledge rather than knowledge management, in other words the knowledge that is needed to maintain the viability of an organisation. In this sense the model seems to have less emphasis on knowledge management and more on organising and deciding what knowledge needs to be managed and the knowledge required to actually manage, using the five functions to achieve this.

Development of the model is based on a review of knowledge management literature. Empirical work and testing is undertaken using a case study based on an ICT company, however there is no actual reference to the company. In relation to an organisation's Knowledge Management Readiness, this model provides an excellent example to consider evaluation that could be undertaken based on the 5 functions of the VSM and associated activities and demonstrates that a systems approach provides a robust underpinning to knowledge management. The model proposed here considers organisations as social systems and refers to the importance of communication, but there is no reference to influencing factors such as power, politics and complexity of communication.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 82	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	5	3
Process	5	4	4	5	2
Activities	5	5	5	5	2
Develop & Test	4	3	3	2	5

Arora R (2002)

Purpose

The purpose of this framework is clear and is based on the Balanced Score Card to align management processes, introduce performance measurements and focus an organisation to implement knowledge management. The author establishes the context by highlighting concerns that managers have in managing and institutionalising knowledge and recognises the need for a structured and systematic approach. The authors assert that successful facilitation of knowledge management in this respect requires a long-term strategy with a clear vision, objectives and approaches that focus on the human side and culture change more so than technology. There is no evidence of empirical work or theoretical underpinning to support this framework.

Knowledge Management Process

The authors explicitly highlight the knowledge management process, through three main objectives, which are knowledge exploitation, innovation and skill enhancement. Each objective is broken down further. With regard to knowledge exploitation the author

highlights reasons for inefficiency and some proposals to rectify these. Knowledge innovation is discussed in the context of communities of practice, and in relation to skill enhancement, the author suggests some activities such as job rotation, and communication to improve competence. Overall the author proposes that the Balanced Score Card provides a process to identify parameters and monitor knowledge management. The Balanced Score Card provides four perspectives that are considered, which are the financial perspective, the customer perspective, learning and growth and the internal business process. Essentially this is the application of the Balanced Score Card as a financial management process and there is no reference to theory or empirical work.

Knowledge Management Activities

Knowledge management activities are indicated through generic parameters that reflect the progress of knowledge management. These primarily relate to different types of communication such as discussion, communities of practice, feedback, team-based activities and collaboration. The author also includes codification, products that have been introduced and measurement of intellectual capital, recognition and reward.

The author presents a matrix to show examples of how the Balanced Score Card can support an organisation to align its management processes and focus the organisation to implement them. The author asserts that it provides a performance measurement system, structured in a way that may lead to a least resistant path and places the main emphasis on people. Although this is logically discussed and makes practical sense it appears to be less about knowledge management and more about a general financial management approach. There is no empirical work or theoretical underpinning that would validate the approach.

Development and Testing

The development of this framework is based on the author's own perspective. There is no evidence of benchmarking or feedback in relation to development and there is no indication of testing.

Results and Conclusions

There are no specific results and no conclusion. The author finishes by recommending the next steps that can be taken when implementing the framework and asserts that the Balanced Score Card provides a framework for implementing knowledge management.

Summary

This is a practical discussion and conceptual application of the Balanced Score Card to general knowledge management in an organisation. The purpose is clear and discussion progresses in a rational and logical manner, however there is little evidence to support whether the approach chosen is appropriate or that the Balanced Score Card would make the impact suggested by the author, because there is no empirical work to substantiate this. There is no evidence of theoretical underpinning and the knowledge management process and activities have been selectively applied to the Balanced Score Card, rather than a robust discussion about what knowledge management is, followed by discussion as to whether the Balanced Score Card could be adapted.

Despite the foregoing, this framework contributes to a potential evaluation framework for knowledge management, because with further empirical work and theoretical underpinning, a Balanced Score Card may provide an effective tool to progress an organisation to shift the emphasis from accountancy based on tangible, easily measurable items to more intangible and value driven performance measures.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 39	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	3	1	1
Process	2	2	2	1	1
Activities	3	3	3	1	1
Develop & Test	1	1	1	1	1

Balasubramanian P, Kumar N, Henderson JC, Kwan MM (1999)

Purpose

The purpose of this framework is initially unclear, and as discussion unfolds, it eventually emerges that the purpose is twofold. The first aspect of the purpose focuses on a framework entitled 'Knowledge Mill', which is intended to describe the knowledge management process. This is then underpinned by a schema for modelling and leveraging knowledge elements in the specific context of decision making to implement process knowledge within an organisation. Implementation is undertaken using a software package called 'Thoughtflow'. Discussion is ambiguous and unstructured resulting in the reader having to decipher the exact purpose. There is no theoretical underpinning and empirical work is limited to one case study.

Knowledge Management Process

The authors define knowledge management as a community capability to share knowledge that creates value for the organisation and its customers, within which the knowledge management process is referred to. For example, to deliver capability the

authors identify operating drivers, which are technology, organisation and processes. Technology relates to the knowledge management system. Organisation is the relationship with other firms, the culture and internal management structure and knowledge management processes are initially explicitly defined as procedures, workflows, management controls and human resource management within the context of capability as indicated above. The authors continue to explain that their approach is split into two parts. The first is a goal oriented modelling schema, which is centred on decision making. This is intended to enable the organisation to define its knowledge objects, find and organise information, store and re-use. The second is the Knowledge Mill framework, which describes the activities that are performed during the conceptualisation, design, development and use of knowledge management applications. There is no reference to empirical work or theoretical underpinning to validate this approach

Knowledge Management Activities

The authors identify activities within the Knowledge Mill framework, which begin with senior management decision making to identify the goals of the application system and continue to include capturing, transforming, classifying, maintaining, discovering and disseminating knowledge.

These activities are referred to as a set of primary activities that need to be performed for all activities in the knowledge management process. The following offers more detail:

- Capturing brings together data/ information including experience and lessons learned from inside and outside the organisation;
- Transformation relates to validation and contextualisation of information so that it is easier to access;
- Classification includes indexing, filtering and linking new information;
- Maintenance relates to content and technical support using IT;

- Discovering identifies information from the knowledge base to make recommendations to different stakeholders in the organisation;
- Dissemination determines how people gain access to the content.

The authors proceed by discussing technical aspects of software deemed appropriate to support the knowledge management process and discuss the process of decision making and its cognitive elements including power and politics. There is no further discussion about this, and no theoretical or empirical underpinning to support the assertions made.

Development and Testing

Development and testing is undertaken through a case study exercise and primarily focuses on the technical aspects of the process. The software 'Knowledge Flow' is applied to strategic planning and deployment and the authors clearly state that the next step will be to undertake qualitative evaluation with users through interviews. At this stage, therefore, testing is incomplete and although the authors refer to empirical work in the development stages vis a vis the case study, they do not discuss the approach taken any further.

Conclusions

The authors conclude by highlighting further work that is necessary to develop the framework and goal oriented schema. They state that from evaluation and lessons learned the intention is to develop a methodology for designing knowledge management systems, but there is no methodology as to how the evaluation was undertaken. The authors recognise the complexities of power and politics in relation to decision making and highlight that a purely rational approach that ignores the subjectivity, personal and organisational dimensions is doomed to failure, and propose that a framework that gives consideration to these issues is more realistic. In this sense they propose that their framework considers this, however there is inadequate reasoning in the discussion to

support this conclusion. There is no clear theoretical underpinning to support the framework, and empirical work focuses mainly on technical aspects.

Summary

The purpose of this framework is initially unclear, and as discussion progresses it emerges that the purpose is twofold. The authors introduced a framework, 'Knowledge Mill' which is descriptive and an underpinning schema for using software, which is based specifically on capturing and organising knowledge around decision making. They discuss the cognitive elements of decision making highlighting the complexities of power and politics, but there is inadequate discussion and no theoretical underpinning. Overall discussion about the framework is confusing because of the interchanging use of terms relating to process and processes that underpin the process. With the exception of discussion about the software, it is difficult to visualise the nature of the framework being proposed here. There is no explicit reference to theoretical underpinning and a case study scenario is used to apply the framework, the emphasis is mainly on technology. In regard to an evaluation framework, this example explicitly indicates the importance of considering power and politics, though offers no further discussion or guidance.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 50	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	4	3	2	1	3
Process	5	3	2	1	3
Activities	5	2	2	1	3
Develop & Test	3	2	2	1	2

Bhatt GD (2002)**Purpose**

The purpose of this framework is clear and is intended to explore the differences between individual and organisational knowledge and how individual knowledge can be transformed into organisational knowledge. A review of knowledge management sets the context in which the author presents this framework providing clarity and understanding of what the author is attempting to achieve. Use of literature is limited and there is no theoretical or empirical underpinning.

Knowledge Management Process

The distinction between process and activities is not made clear. In general the author argues that it is through organisation including procedures, information, rules and ideas that knowledge is realised and knowledge management is defined as a process of facilitating knowledge. The process includes two approaches, the first being the relationship between individual and organisational knowledge and the second relates to knowledge management strategies. Each approach is discussed, logically reasoned and visually illustrated. Both provide a continuum of the process from individual to formal knowledge management and an underpinning strategy to manage this. In addition the author makes the distinction between independent and inter-dependent interactions, and the nature of tasks between routine and specifiable, and non-routine and non-specifiable. There is no reference to theoretical or empirical underpinning for the knowledge management process and because each approach is referred to as a process, this can cause some confusion in attempting to understand the structure.

Knowledge Management Activities

The author does not clearly and explicitly identify knowledge management activities within the process, but refers to learning, diverse tasks and the use of information systems such as Internet, Intranet and extranet. Again there is no reference to theoretical or empirical underpinning.

Development and Testing

This framework has been developed through discussion and reference to literature. There is no indication of empirical research and testing of the framework.

Results and Conclusions

There are no specific results and the author concludes by emphasising the importance of creating organisational knowledge through individual interactions and the importance for management to provide the right environment to achieve this. There is no further discussion or indication of how management might achieve this.

Summary

The purpose of the framework and subsequent discussion is clear however the author does not distinguish between knowledge management process and activities, but uses these terms interchangeably, with emphasis on process. The main focus is on the transfer of individual to organisational knowledge and this clearly reasoned. There is no explicit theoretical underpinning or empirical research, with the exception of reference to literature to justify the author's perspective. There is no evidence of testing, therefore this framework remains conceptual. The main contribution from this framework is the recognition of the continuum within which knowledge is transferred from individuals to the organisational level, and in terms of evaluating an organisation's readiness for

knowledge management, this continuum may already be in place, but not necessarily made explicit in the business process.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 41	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	1	1
Process	3	3	3	1	1
Activities	2	2	2	1	1
Develop & Test	1	1	1	1	1

Binny D (2001)

Purpose

The purpose of this framework is clear and is stated as being a framework intended to assist organisations in balancing their knowledge management focus and establish and communicate their strategic knowledge management. This includes two main aims, the first is to review the diverse knowledge management literature and provide a framework for the discussion of knowledge management, which is intended to minimise confusion and assist in planning and investment in knowledge management in organisations. The second main aim is to provide a checklist of knowledge management applications and technologies, which can be used to evaluate an organisation's current level of knowledge management, related activities. Entitled the knowledge management Spectrum (KM Spectrum), it is also intended to provide understanding of the range of knowledge management options, applications and technology. The idea to develop the

KM Spectrum has arisen from the author's previous experience of working with executives and strategists who are attempting to engage with knowledge management, and in this sense provide general empirical work. There is no theoretical underpinning to support the purpose or any other aspect of the framework.

Knowledge Management Process

The authors divide knowledge management into six main categories, which can be viewed as the process. The six categories termed 'Elements' are:

- transactional knowledge management, which refers to the application of technology, for example, customer services applications, order entry applications;
- analytical knowledge management is the interpretation or creation of new knowledge from various sources of materials and data, and includes, for example, data warehousing, data mining;
- asset management, which focuses on processes associated with the management of knowledge assets, for example, intellectual property, document management. This involves two key areas, which are explicit knowledge assets and processes relating to identification, exploitation and protection of intellectual property;
- process based knowledge management covers codification and improvement of processes or work practices, procedures and methodologies;
- developmental knowledge management focuses on increasing the competencies or capabilities of the organisations' knowledge workers. This covers transfer of explicit knowledge through training, and the development of tacit knowledge through communities of interest and engendering a learning culture;
- innovation/creation knowledge management concentrates on providing an environment in which knowledge workers can come together in teams to collaborate in the creation of new knowledge.

Developmental, innovation and creation appear to be one and the same as both involve collaboration and learning from which creativity emerges. The author does not

adequately explain why these have been split into different categories. It is indicated that empirical work has been drawn from the authors' personal experience of working with organisations. There is no theoretical underpinning.

Knowledge Management Activities

Apart from the reference to the activities indicated within the elements referred to in the foregoing, knowledge management activities are not explicitly discussed. The author does, however, highlight that existing knowledge management activities need to be acknowledged, understood and considered when developing strategies and plans, but makes no further reference to them.

Development and Testing

Development of this framework is based on the author's experience of working with executives and strategists. Whilst the author states that the framework has been developed with executives, this has not been substantiated with real evidence or references. In addition there is no evidence of testing the framework and no theoretical underpinning.

Conclusions

The author concludes by emphasising that the purpose was not to establish what knowledge management is, but to ensure that all available approaches, applications and technologies are considered.

Summary

The purpose of this framework is clear and discussion progresses with clarity and reasoning. There is no theoretical underpinning and no indication that the framework could actually achieve what is intended, because it does not appear to have been tested

empirically. The framework may offer practitioners guidance and a categorisation of approaches about what might be available to consider in relation to knowledge management. The knowledge management process provides the main focus and knowledge management activities are not explicitly referred to. Neither process nor activities are underpinned by theory and empirical work has been drawn from the author's experience of working with strategists and executives, however, there is no methodology or constructive approach.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 39	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	4	4	1	3
Process	4	3	2	1	2
Activities	1	1	1	1	1
Develop & Test	1	1	1	1	1

Bolloju N, Khalifa M, Turban E (2002)

Purpose

The authors introduce an approach for integrating decision support and the knowledge management process using knowledge discovery techniques. They present an integrative framework for building enterprise decision support environments. The context in which this framework is introduced is based on decentralised decision making and the requirements of decision-makers to combine different types of data and knowledge (both tacit and explicit) available in organisations. The purpose is ambiguous in that further into discussion, the authors then state that they are introducing two frameworks. The first

is for developing enterprise decision support environments as initially highlighted; the second is for conducting research in the fields of decision support and knowledge management. The second framework, however, does not appear to be explicitly referred to from this point onwards. There is no reference to empirical work throughout, and theory is specifically drawn from decision support.

Knowledge Management Process

The knowledge management process is referred to in relation to decision making, however the main focus is more on the decision making process. Reference to knowledge management process is limited in that the authors categorise knowledge into general domain knowledge, organisational knowledge and problem specific knowledge and how this knowledge is necessary to support decision-makers. They continue by focussing on the knowledge creation process and using Nonaka's (1994) model of knowledge creation, which includes socialisation, externalisation, combination and internalisation, which they then apply to decision making. The authors propose that the integration of decision support and the knowledge management process has three characteristics that facilitate knowledge conversion through automated techniques. These are:

- the application of knowledge discovery techniques for knowledge externalisation;
- the employment of repositories for storing externalised knowledge;
- the extension of knowledge discovery techniques.

The authors do not fully discuss and reason the connection from a knowledge management perspective but from a systems modelling and decision support perspective, nor do they provide empirical work to support the three characteristics chosen. The concept of the knowledge process deteriorates as the model unfolds because in describing how the model will operate, the authors appear to consider tacit and explicit knowledge in the same vein as data and information. In this sense, they seem to have disregarded the

complexity of tacit knowledge, despite using Nonaka's (1994) knowledge creation model.

Knowledge Management Activities

Knowledge Management activities are not explicitly referred to.

Development and Testing

The development of this framework has been undertaken based on decision support systems, and the application to knowledge management is weak with very limited reference to knowledge management literature. This is reflected in discussion and is demonstrated by a superficial level of understanding about tacit and explicit knowledge. There is no indication of empirical work to test this framework.

Results and Conclusions

There are no results and the authors' conclusion is weak with assertions made about how the framework will assist decision-makers, in addition there is no indication of testing to justify this. The authors highlight implications for research, which is primarily based on modelling and IT, and decision making.

Summary

The purpose of this framework is a little ambiguous because the authors refer to two frameworks and produce one, which purports to provide an integrative approach to decision making and knowledge management. Clarity of discussion and reasoning is weak and the outcome does not fully meet the initial purpose. The main focus is on decision making with little regard to the concept of knowledge management overall. The knowledge management process is referred to through integration with decision support systems, but this appears to be at a superficial level. Knowledge management activities are not included. Development is undertaken from a decision support systems

perspective and testing has not been undertaken. Theoretical underpinning is drawn from decision support systems, however the application of this does not address the overall concept of knowledge management and remains general. There is no reference to empirical work throughout. The contribution that this framework may make to an evaluation of Knowledge Management Readiness relates to the decision making process as one aspect and raises ideas about understanding in relation to why decisions may be taken, and in what context.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 31	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	4	3	2	4	1
Process	3	2	2	2	1
Activities	1	1	1	1	1
Develop & Test	2	1	2	3	1

Bower WD, Heminger AR (2002)

Purpose

This framework is intended to provide an overarching strategy to guide the identification and selection of knowledge management projects and as such is clearly stated. Although the purpose is clear, there is inadequate discussion and no evidence of theoretical underpinning. The framework has been subjected to a Delphi study, from which recommendations are presented to improve. However, although the criticisms of the framework are presented, the authors do not present improvements at this stage.

Knowledge Management Process

The knowledge management process is referred to as a six-step process to explore aspects of knowledge management and the selection of an appropriate knowledge management project. The six steps are to:

- analyse corporate strategic objectives using SWOT methodology;
- identify potential knowledge opportunities and limitations;
- identify and address potential knowledge management projects;
- identify and address knowledge management project variables affecting project implementation and success;
- identify and address factors for project variables affecting the successful implementation of knowledge management projects;
- finalise knowledge management project selection.

Within each step key tasks that need to be considered and decisions that should be made are highlighted. The knowledge management process is referred to generally, but it is not discussed in a structured manner with reasoning. The six-step approach referred to above appears to be more about project selection rather than a knowledge management process. There is no evidence of theoretical underpinning. Empirical work has been undertaken and is referred to in development and testing.

Knowledge Management Activities

Knowledge management activities are not explicitly referred to.

Development and Testing

The authors have referred to knowledge management literature in the development of this framework and indicate that empirical work has been undertaken through a Delphi assessment. They do not however, appear to have taken action based on the results of the Delphi assessment in this case, but indicate their intention to do so.

Results and Conclusions

The authors conclude by recognising the feedback and results that were received from the Delphi assessment. The feedback suggests that it is a viable framework for identifying and selecting knowledge management projects. Criticisms include comments such as:

- knowledge management is not a project;
- more attention should be given to organisational culture;
- consideration should be given to preparing for support of a project, including financial and human resources;
- more attention to maintaining flexibility;
- proposed customers of the project should be defined;
- a cost benefit approach to the exercise should be introduced.

The authors finally state that the next stage is to review and empirically test the framework.

Summary

The purpose of this framework is clearly stated and based on a literature review. There is no theoretical underpinning for any aspect of the framework. The knowledge management process is referred to in a general manner, with the main focus on the process of project selection. Knowledge management activities are not included. Empirical work and constructive feedback in the development of the framework has been

undertaken at this stage, and the authors identify areas for future improvement. The research undertaken in relation to the development of this framework provides a useful contribution to the development of an evaluation framework for an organisation's Knowledge Management Readiness by highlighting associated issues of consideration gathered through feedback undertaken through a Delphi assessment.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 41	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	3	3	1	3
Process	3	3	3	1	3
Activities	1	1	1	1	1
Develop & Test	3	3	2	1	3

Carneiro A (2001)

Purpose

The purpose here is explicitly stated to be the development of a conceptual model of knowledge management efficiency in organisations. The model is clear and reasoned, and is divided into two areas. These are technical tools for specification of intelligent systems resources and intelligent agents (people) who focus their roles on the organisation's performance. The model is developed based on a set of factors that justify the relationships among knowledge management efficiency, intelligent agents and technological resources. In addition the authors purport to develop a framework for the

roles of intelligent agents and technical tools in a conceptual knowledge management model. There is no reference to theory or empirical work to underpin this.

Knowledge Management Process

The knowledge management process is explicitly regarded as knowledge acquisition, use of technical tools and organisation of people, all of which contribute to organisational effectiveness. The model is presented as a sequential process with knowledge sources feeding into technical tools and intelligent agents both of which contribute to knowledge development and result in knowledge management and organisational efficiency. The dynamics and complexity of knowledge management is not demonstrated and there is no empirical evidence or reference to theory to support this approach.

Knowledge Management Activities

Knowledge management activities are not explicitly referred to.

Development and testing

Development of this model is based on a literature review and personal experience. There is no evidence of empirical work. The author emphasises the advantages that decision support systems and IT can bring to the effectiveness of the organisation and knowledge management. Although in each case, discussion is well reasoned and clear, the final conceptual model appears to be an after thought with no indication as to how the model operates or could be applied in an organisation.

Results and Conclusions

The author concludes by highlighting that the model needs to be validated through empirical work and that future research should explore specific areas such as the measurement of factors that affect intelligent agents and use of technical tools and

assessment of managers attitudes regarding the usefulness of strategic decision support systems and IT to improve knowledge management efficiency. There is no mention of the development of theoretical underpinning.

Summary

The purpose of this model is clearly stated as being conceptual and remains so, with no empirical evidence throughout. Discussion is presented with clarity and a certain amount of reasoning using literature to contribute to the overall development. The knowledge management process has been explicitly referred to as three key elements of the conceptual model but not discussed in any detail. Knowledge management activities have not been referred to. Emphasis is placed on decision support systems, however there is no further discussion, no theory in relation to decision support or knowledge management. This framework is a reasonable example and standard approach which does not contribute anything significantly different when considering an organisation's readiness to engage with knowledge management.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 42	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	1	1
Process	5	3	2	1	1
Activities	1	1	1	1	1
Develop & Test	2	2	2	1	1

Connell C, Klein JH, Loebbecke C, Powell P (2001)**Purpose**

The purpose here is the introduction of a Knowledge Management Consultation System (KMCS), in which the authors provide the characteristics of the structure and functioning of such a system. This is clearly stated, and a model of the KMCS and the purpose of the model is presented and discussed in the context of knowledge transfer. The distinction is made between knowledge, the need for knowledge and the carriers of these components, including the complexities of transferring tacit to explicit and tacit to tacit knowledge. The authors clearly state that the model has not been empirically validated and therefore remains conceptual.

Knowledge Management Process

The knowledge management process is made clear, with the emphasis of discussion on the process of knowledge transfer from person to person, and person to machine. The authors highlight weaknesses in the use of IT, and propose that the KMCS considers the organisational implications of a knowledge management system. Discussion is presented with clarity focussing on two key components of the KMCS- a human expert or computer that holds knowledge and a user with a need to consult the knowledge, each defining the other. The authors refer to the socio technical approach as an indication of theoretical underpinning, and point out that either way both components comprise one element of a socio-technical system. This incorporates explicit foreground knowledge such as facts, rules, formal heuristics and social norms, and implicit background knowledge, which are routine or instinctive, tacit and intuitive. The authors propose that the KMCS attempts to bring together the social domain and knowledge based systems to develop and integrate both with the same consideration in one process.

Knowledge Management Activities

Knowledge management activities have been referred to as the components of the KMCS and are clearly defined and categorised according to the type of action or activities within the overall process of consultation. These include the participants in different roles within a system, for example, those who are experts to be consulted and those who require knowledge.

The author asserts that participants within the system whether an expert or client have their own conceptual structures and definitions of the world which are carried out through social constructs from which rules are developed through social interaction. The consultation activity is, therefore, subject to interpretation, norms, values and beliefs and there is no guarantee of accuracy in any exchange. Although coherently discussed, there is no empirical work to support this perspective.

Development and Testing

The approach taken to development and testing of the KMCS has not been explicitly stated and appears to have been undertaken through discussion, reasoning and contribution from literature. There is no empirical evidence to validate the KMCS and there is no indication that it has been tested. It, therefore, remains aspirational.

Results and Conclusions

There are no specific results in relation to this framework, as it has not been empirically tested. The authors conclude by declaring that the KMCS could have implications for the functionality of computer based knowledge management systems.

Summary

The purpose of the KMCS is discussed in a coherent and balanced manner. In some areas, theoretical underpinning is drawn from literature to support ideas and discussion, however this is very limited and general, and there is no empirical work. The knowledge management process is discussed directly in relation to knowledge transfer and focuses on consultation between people, and between people and IT. Knowledge activities include communication only, and are referred to within the scope of the consultation. Although this is well reasoned and clear, the inadequacy of robust empirical and theoretical discussion in addition to the fact that no further development and testing have taken place weakens the system.

The main contribution that this system makes to the development of an evaluation framework is the distinction and interaction between people and IT, and the recognition that a socio-technical approach may be a relevant underpinning theory providing a more holistic view of knowledge management.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 51	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	2	1
Process	5	5	5	2	1
Activities	3	2	2	2	1
Develop & Test	1	1	1	1	1

De Gooijer J (2000)**Purpose**

This is a model of knowledge management for measuring the performance of knowledge management strategies for a public sector agency. Within the model, there are two frameworks, the first is intended to measure knowledge management performance and is based on a balanced scorecard approach. The second is a behaviour framework intended to identify the levels of practice demonstrated by individuals and is based on change management. The purpose is explicitly stated and discussion is presented with clarity and reason. The background and empirical work in relation to the development of the frameworks is based on a public sector organisation and the main issues that needed to be addressed in this organisation clearly presented. This provides context and understanding.

Knowledge Management Process

Three main approaches to the knowledge management process are referred to. These include:

- knowledge management map;
- Tacit and explicit knowledge transfer processes;
- Sensemaking as a key element in ICT.

There is no further discussion in relation to these approaches and the authors chosen approach is to use a knowledge management map, the elements of which the authors deem appropriate to meet the requirements of the case being considered. The elements include strategy, infrastructure, products and services, relationships, culture and behaviour, processes and content. There is an indication that this approach was chosen as a result of discussion and empirical research with the case organisation, but there is no methodology to demonstrate how this was achieved and no reference to theoretical underpinning.

Knowledge Management Activities

Knowledge management activities have not been included.

Development and Testing

Development of the model and frameworks has been undertaken through empirical work and issues raised in the case organisation in addition to a literature review. However although the discussion justifies the chosen approach, there is no discussion about alternative approaches that may have been considered and why they were rejected. The performance framework focuses mainly on the balanced scorecard with knowledge management concepts broadly applied to provide a knowledge management approach. The behavioural framework has been developed around change management and the sequences of behaviour that individuals will go through during the change process. There has been no empirical work or testing of this model and the two frameworks. Theoretical underpinning is briefly considered in relation to the behavioural framework only.

Results and Conclusions

The author concludes by recognising that implementation is still at an early stage, but does not indicate what implementation has taken place. In addition there is a final assertion made that the design of the frameworks provides an approach for hard business measures to be linked to soft social measures, but there is no indication of how these could be measured.

Summary

The purpose and discussion about this framework is clear, however reasoning in some areas of discussion appears weak. For example, the frameworks are each underpinned by logical approaches to performance measurement using a balanced scorecard approach in the first framework, which has been well justified. The second framework in relation to

management behaviour is underpinned by one theoretical approach in relation to change management. This choice has not been reasoned out. Development is specific to one public sector organisation and in this sense the frameworks are very focussed, particularly in relation to the approach taken. They have not been tested in the case organisation or beyond and therefore remain conceptual. This framework provides a useful contribution to evaluation through the knowledge management map and associated elements that comprise the process, i.e. strategy, infrastructure, products and services, relationships, culture and behaviour, process and content.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 48	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	3	2	4
Process	3	3	2	2	2
Activities	1	1	1	2	2
Develop & Test	2	2	2	2	2

Duru Ahanotu N (1998)

Purpose

This framework is explicitly and clearly presented, and is intended to demonstrate how production knowledge can support core competencies in manufacturing and balance the activities of production workers between creation and maintenance of knowledge and production. The author provides a comprehensive literature review and applies the principles and theories associated with learning and knowledge management to manufacturing processes. In doing so, the author challenges perceptions that place greater

emphasis on the importance of knowledge workers (e.g. those who design) over production workers, arguing that the skill of production workers is equally essential to learning and innovation.

Knowledge Management Process

The author refers to a continuum ranging from learning through action to innovation or creation, which he refers to as knowledge development in the manufacturing industry. Although he does not explicitly state so, the implication is that this is the knowledge process. Drawing on theories of learning, discussion continues and the author concludes by recognising that the iterative process of innovation, continuous improvement and translating these cycles into core competencies provides long-term sustainability for the organisation. This is a limited approach to the concept of knowledge management representing only one aspect. There is no evidence that empirical work has been undertaken.

Knowledge Management Activities

The author explicitly identifies three activities to improve the knowledge development of production workers, which should be balanced with the need to maintain product output. These are production/operations defined as all activities that directly manipulate a product, experimentation defined as the discovery of knowledge, which is separate from production/operations, and absorption, which is the acquisition of knowledge. The author continues by discussing these in more depth and highlights the importance of time for production workers to undertake these activities in a product cycle, identifying slack time as an opportunity to learn and innovate. Having established knowledge activities, the author categorises workers into two sections - core workers who have established expertise and are active seekers of knowledge who lead innovation and "peri core" workers. "Peri core" workers are sub divided into three types. The first are those who currently lack knowledge but will develop to eventually join the core. The second are those who are active innovators when required and the third are interested in specific

assignments only. The author continues by discussing the importance of cross-organisational working and communities of practice to ensure that diverse viewpoints are taken into consideration. This is a description of an organisational structure from a knowledge management perspective, there is no empirical work or theory to underpin this approach, nor is there reference to organisational literature to provide a reasoned discussion.

Development and Testing

Development of this framework is based on one aspect of knowledge management drawn from literature and applied to the manufacturing industry and is a description from the author's perspective. There is no empirical work to test the framework, therefore it remains conceptual.

Results and Conclusions

There are no specific results. The author concludes by drawing together discussion and pointing out that the framework is not intended to resolve issues. It presents methods to consider knowledge development and product creation for ongoing evolution of core competencies and highlight that production workers can successfully engage with the processes of creation, learning and innovation.

Summary

The purpose in this case is clearly stated, and discussion focuses on the recognition that all employees have something to contribute to learning and development in an organisation if given the opportunity. In this sense, the author's discussion is well reasoned with theoretical underpinning derived from theories of learning and learning organisations. The knowledge management process is identified in relation to learning by doing and innovation. Knowledge management activities are explicitly stated and discussed with clarity, but there is no indication of empirical development and testing.

When considering an organisation's Knowledge Management Readiness, the main contribution this framework offers is recognition of the need for horizontal and vertical participation and the contribution that every employee may have to creativity and improvement in the organisation.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 50	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	4	3	4	4	1
Process	3	3	3	3	1
Activities	5	3	4	3	1
Develop & Test	1	1	1	1	1

Escriba-Esteve A, Urra-Urbieta JA (2002)

Purpose

This is a conceptual framework, the purpose of which is to consider co-operative agreements or partnerships from knowledge and learning perspective and is clearly stated in this respect. Discussion is clear and sets the context and the authors provide contrasting views of knowledge management from a robust literature review, which is well reasoned to establish their own approach to knowledge management. The main focus from a knowledge management perspective is on learning and knowledge creation processes that take place in inter-organisational partnerships or alliances. Reference is made to learning theory, and there is no evidence of empirical work.

Knowledge Management Process

Learning and the knowledge creation process are explicitly and clearly discussed in the context of co-operative agreements. The knowledge creation process includes creation, transfer and integration of knowledge between companies. The authors provide a reasoned argument for using co-operative agreements to achieve superior performance specifically by focussing on the process of knowledge creation, rather than just the settlement of mutual gain. Learning processes are discussed as to what actually occurs within the co-operative agreements and is divided into two perspectives:

- learning to design and manage the co-operation as a strategic option;
- learning as a means of acquiring know how, skills, and competencies from another company to improve its own strategies and competitive advantage.

A distinction is made between individual, group and organisational learning and how individual learning relates to organisational, or group learning. Factors that may facilitate or inhibit learning and the knowledge creation process are recognised and discussed, with reference to theory. There is no reference to empirical work to validate this approach.

Knowledge Management Activities

Knowledge management activities are not explicitly referred to.

Development and Testing

Development of the framework has been undertaken from a robust literature review, underpinned by theory. Discussion is clear, well reasoned and balanced incorporating different perspectives and why the authors have chosen a particular approach. There is no evidence of empirical work and testing has not been undertaken, therefore as explicitly stated by the authors, this is a conceptual framework.

Results and Conclusions

The authors conclude by highlighting the benefits of this framework and future research that would be useful to unravel additional issues in relation to co-operative agreements. The importance of the learning process is highlighted as this may facilitate or inhibit the knowledge creation process and competitive superiority.

Summary

The purpose, development, discussion and reasoning in this framework are clear and are underpinned by theory and a robust literature review. There is no evidence of empirical work, therefore, the framework remains conceptual or aspirational. Knowledge management process is explicitly identified in relation to knowledge creation. Learning processes are discussed in relation to knowledge creation and the impact on co-operative agreements. Knowledge management activities are not referred to. This framework concentrates on the benefits and advantages that can be gained from mergers, which is useful from an evaluation perspective. This is also helpful to articulate the similar benefits that could be achieved from an internal merger of departments when evaluating restructure and an organisation's readiness to engage with knowledge management.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 60	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	4	1
Process	5	5	5	4	1
Activities	1	1	1	1	1
Develop & Test	3	3	4	4	1

Firestone JM (1999)**Purpose**

The purpose of this framework is clearly stated. The introduction embarks on a fairly complex definition of Enterprise Knowledge Management, Natural Knowledge Management System, Artificial Knowledge Management System and Distributed Knowledge Management System, with a brief overview of the interactions. The author then states the purpose as being an examination of the relationship between the Distributed Knowledge Management System and Enterprise Knowledge Management System. Discussion continues in a disjointed manner with assertions that are not fully reasoned with clarity. There is no clear reference to theory or empirical work. The use of technical language and acronyms impede understanding. The author produces a matrix that identifies knowledge and a knowledge management process, activities within the process and a Distributed Knowledge Management System. This matrix is useful and helps to provide some clarity.

Knowledge Management Process

The knowledge management process is explicitly drawn out in the context of Enterprise Models. The Enterprise Model is defined as a network of rules intended to explain and predict interactions in the organisation and its environment. The author states that knowledge management production processes produce enterprise models, and there are three high-level knowledge processes that can be modelled in Enterprise Models. These are knowledge production, acquisition and transmission. There does not appear to be any specific theory or empirical work to justify this perspective. The author continues by discussing each high-level knowledge process, explicitly identifying activities within each area.

Knowledge Management Activities

Knowledge management activities are clearly drawn out as activities to meet the requirements of the high-level knowledge process, though again there is no theory or empirical work. The author clearly illustrates the knowledge production and acquisition processes and discusses the associated activities further. With regard to knowledge production, activities include generating new knowledge, revising and refining existing knowledge and re-generating previously produced knowledge. Knowledge acquisition activities include gathering external data and information and knowledge, filtering it, testing and storing. The process of knowledge transmission includes knowledge sharing activities both IT based and human based.

Development and Testing

There is no indication of empirical research in the development and testing of the framework, and no theoretical underpinning.

Results and Conclusions

There are no results. The author very briefly concludes that the Enterprise Knowledge Management System is an improvement on the Distributed Knowledge Management System.

Summary

Overall it is difficult to follow what the author is attempting to achieve with this framework, partly because the author does not set the context, which is further exacerbated by disjointed discussion. This model is developed under the auspices of Enterprise Models, however because this paper does not have a natural flow and logical links between sections, it is difficult for the reader to follow the author's discussion and ultimately what is attempting to be achieved. The use of technical language and

acronyms appears to complicate what emerges as a fairly straightforward description of a knowledge management model.

Knowledge management process and activities are clearly stated and logically discussed from the author's perspective. There is no indication of theoretical or empirical underpinning, or testing of this framework. The main contribution is the discussion about different knowledge management systems.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 40	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	2	1	2	1	1
Process	5	4	3	1	1
Activities	5	4	3	1	1
Develop & Test	1	1	1	1	1

Gao F, Li M, Nakamori Y (2002)

Purpose

The purpose of this framework is stated as a new systematic perspective on knowledge and a toolbox for practical knowledge users, however, as discussion continues confusion emerges. A review of literature and exploration into knowledge theory informs discussion and development of the author's perspective on knowledge management. From this, the authors indicate that there is a softer trend in the knowledge management process, in addition to new technology such as the use of the web, information technology and expert systems.

Discussion becomes disjointed when the authors propose a new systematic perspective on knowledge, using critical systems thinking and soft systems thinking, which when applied to knowledge management is intended to provide a useful toolbox for practical knowledge users. Although a toolbox is provided, discussion in relation to development loses clarity because the author then refers to two sets of systems. The final outcome presents a framework that relates a proposed knowledge system to eight systems methodologies applied to different knowledge processes. The authors refer to this as being the tool kit, however there is limited discussion as to why each systems methodology might be appropriate and no indication of how this tool kit might be used in practice.

Knowledge Management Process

The knowledge management process is organised and defined by the authors in the first instance by separating the management of work process from the management of knowledge workers, to classify knowledge management into two dimensions, which are hard conditions and soft environments. This is clear and well reasoned out and the authors propose two sets of systems methodology to underpin these dimensions:

- the organisational knowledge system (explicit and cultural knowledge);
- the human being as part of an organisation and personal knowledge (explicit and tacit).

The authors define the organisational knowledge system or process as the management of existing knowledge, which includes developing knowledge repositories and knowledge compilation arrangements and categorisation. The human being as part of an organisation is defined as the management of specific knowledge management activities. There is no reference to empirical work, and theory is drawn from systems thinking.

Knowledge Management Activities

Knowledge management activities are explicitly stated and include managing knowledge acquisition, creation, distribution, communication, sharing and application. The authors propose that to sustain these activities it is important to create the right hard and soft environments, for example the hard environment relates to technology and the soft environment relates to people issues such as team work and the learning climate. The authors distinguish between knowledge objects and process, defining knowledge objects as entities that exist in their own right over time in a hierarchical system which includes data, facts, information, experience, learning and expertise. The knowledge is then used as a tool to underpin people's theoretical and practical work in the social organisational setting. Again there is no reference to empirical work to substantiate this approach.

Development and Testing

There is no indication of testing of this framework. With regard to development of the framework and theoretical underpinning, the authors' explicitly state the need for two sets of systems to underpin knowledge management. They propose that various systems methodologies enable knowledge to be applied systematically by employing soft systems methodologies generically or as a lens according to the knowledge management approach and methodology that demonstrates most synergy. Although initially the distinction between the use of two sets of systems methodologies is made, the application of various soft systems methodologies is applied in the final framework. At this stage, the paper loses clarity, because there is no specific focus and for the practitioner, no indication as to how to apply and use each methodology.

Results and Conclusions

There is no indication that this framework has been tested, therefore, there are no results. The authors conclude by asserting that this framework could be used as a whole or a lens to systematically apply knowledge. This includes, decision making, engendering

working relationships, facilitating knowledge sharing. There is no indication of how this could work in practice.

Summary

The purpose in this case is to provide a new systematic perspective on knowledge and a useful toolbox for practical knowledge users. As discussion unfolds, however, discussion loses clarity and the extent to which the purpose is achieved is questionable. Theoretical underpinning is drawn from the area of systems thinking, however because the authors refer to several different approaches in systems thinking, discussion remains at a general level. This does not provide the opportunity to understand and justify why a particular soft systems approach might be used at a particular point of the knowledge management process. There is no indication of empirical work in the development and testing of the framework, therefore it remains conceptual. Further, the authors intend this framework to be a toolbox for practical knowledge users, if, however, practical knowledge users do not have prior knowledge and understanding of each systems thinking approach, the purpose of the framework may not be achieved. This framework contributes a conceptual overview of systems thinking to knowledge management and indicates that such an approach may be an effective way forward in the development of an evaluation framework.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 43	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	4	2	3	3	1
Process	4	2	3	3	1
Activities	3	2	3	3	1
Develop & Test	1	1	1	1	1

Goh SC (2002)

Purpose

The purpose, introduction and discussion about this framework are clear. The author prescribes an integrative conceptual framework that links key factors in literature that relate to knowledge transfer. This includes managerial implications and organisational characteristics. The author reviews key issues that relate to knowledge transfer including organisational learning, technology to facilitate transfer, cultural issues and structure. Discussion is clear and presented with clarity, however it lacks depth remaining at a general level.

Knowledge Management Process

The author briefly distinguishes between hard organisational processes and soft people oriented processes. From the literature review, the integrative framework includes the process of leadership, problem solving/seeking behaviours, support structures, absorptive and retention capacity and types of knowledge. Each process is underpinned by a

description of approaches that would facilitate knowledge sharing and this is presented in a prescriptive manner, with no contrasting debate.

A summary of management approaches to achieve effective knowledge transfer is provided. There are many assertions made by the author with no theoretical underpinning or empirical work, and assumptions are made that an organisation will generally be compliant. This is despite a comment about power and knowledge, which receives no further consideration.

Knowledge Management Activities

Knowledge management activities are not explicitly referred to.

Development and Testing

This is a conceptual framework that has been developed from a review of literature, though it lacks depth and reasoning. Testing and associated empirical work has not been undertaken.

Conclusions

The author concludes by stating that the framework contributes to the elaboration and integration of some key factors that influence the knowledge transfer process and re emphasise the prescriptive approach presented.

Summary

This is a presentation of a knowledge management framework based on a literature review that focuses on aspects of knowledge transfer. The purpose and discussion is clear, however reasoning is weak with little contrasting discussion and overall a prescriptive approach. There is no overall research design and although theory is referred

to, this remains at a general level. Empirical work has not been undertaken. An important contribution that this framework may offer to the concept of an organisation's readiness to engage with knowledge management is the right Management approach and organisational design to facilitate knowledge transfer.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 37	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	3	2	1
Process	3	2	3	2	1
Activities	1	1	1	1	1
Develop & Test	1	1	1	1	1

Hatten KJ, Rosenthal SR (2001)

Purpose

The purpose of this framework is clearly stated, the intention of which is to integrate knowledge into corporate strategy. The authors state that the production of the framework has arisen from previous research which pointed to the need for practical frameworks to help corporate managers participate more effectively in strategy formulation and knowledge management processes. There is no referencing or evidence of this empirical work. However when describing how the framework could be implemented a retrospective view on several case organisations is offered, but there is no methodology or indication as to whether these form part of the research referred to. There is no evidence of theoretical underpinning.

Knowledge Management Process

The framework contains seven key tools, which are intended to assist managers in implementing the overall knowledge process. These are:

- **Action Alignment Model** - This focuses on the current strategy and associated operating activities and is a process for assessing the organisation's effectiveness and business processes through targeted knowledge management;
- **Do/Contract Decision process** - This relates external contracting and partnerships and the acquisition of new skills and abilities achieved through partnership;
- **3C Test** - This is intended to test for strategic balance by assessing the feasibility of the current business strategy and in doing so considers the customer base, business process capabilities and organisational competencies (hence 3C). Organisational competencies refer to the 'know how' that already exists. Overall the 3C test is intended to provide an overview allowing for an integrative approach to understand strategic capabilities and competencies and identify any gaps;
- **Strategic Stretch Test** - This relates to the future of the organisation and new business opportunities. In this case the 3C test is used to compare future requirements to what is currently available. It then extends this to consider competitive advantage and external and internal stakeholders and potential constraints they may impose on the organisation. At this stage a strategic risk assessment is carried out and options for managing the decisions that may be taken;
- **Review of Experimental Knowledge Gained** - This includes learning in action and gaining knowledge to support subsequent decisions about opportunities to pursue. At this stage of the process the experimental knowledge from strategic business experiments is assessed;
- **Performance Metrics** - These relate to the choice of performance measures and systems to support this, for example setting performance targets;

- **Knowledge Ignition Process** - This relates culture and knowledge based behaviour to cycles of learning in action and essentially the establishment of a learning culture.

None of the foregoing processes are underpinned by theory, nor is there explicit evidence of empirical work.

Knowledge Management Activities

Knowledge management activities are referred to as specific actions that should be taken to meet the requirements of the seven-stage process. These are too numerous to repeat here, but suffice to say they comprise a list of practical actions which are clearly stated and offer an effective guide for practitioners.

One activity that has been clearly presented and differs from the standard knowledge/business process relates to the assessment of risk. The authors propose that once a new strategy has been provisionally decided upon, a risk assessment should be undertaken. The model to undertake this includes knowledge content according to the seven-stage process assessed against key aspects of an organisation, for example customers, competencies, country and currency, Chief Executive Officer. Guidance is offered as to how to implement this model. There is no evidence of empirical work or theoretical underpinning.

Development and Testing

There is no methodology to indicate how the framework was developed. Having established the framework, the authors apply specific stages of it retrospectively to several case organisations to justify how it could be beneficial. There is no indication that actual empirical work has been undertaken.

Results and Conclusions

There is no overall conclusion, but at the close of each chapter relating to aspects of the framework, the authors tend to conclude by emphasising the benefits of the framework.

Summary

The purpose of this framework is clearly stated, and discussion is clear, however reasoning lacks robustness. Assertions are made throughout, with poor referencing, weak use of literature, and no clear empirical work to test the framework and no theoretical underpinning. The knowledge management process and activities are explicitly referred to in a clear way and guidance offered about implementation. Generally, this framework provides a comprehensive and practical approach, which could contribute to the development of a framework intended to evaluate an organisation's Knowledge Management Readiness.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 52	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	2	1	1
Process	5	5	3	1	1
Activities	5	5	3	1	1
Develop & Test	2	2	2	1	1

Hlupic V, Pouloudi A, Rzevski G (2002)**Purpose**

The purpose of the framework proposed here is clearly stated for use in research into knowledge management. The framework is intended to provide a systematic and interdisciplinary approach to research in knowledge management through technical and hard; organisational and soft; philosophical and abstract perspectives.

Discussion is well structured and set in context by reviewing previous management approaches such as Total Quality Management and Business Process Re-engineering, in addition to knowledge management. The authors propose that in the past, too much emphasis has been placed on technology and inadequate research has been undertaken into people's experiences of the interaction between business and people, and technology factors. The authors explore what knowledge management is and recognise that although the benefits to organisations are clear, there is still confusion about what knowledge management means and literature is diverse with no agreed definition behind the term knowledge management. There is no explicit reference to theoretical underpinning or empirical work.

Knowledge Management Process

Drawing on knowledge management literature, the authors provide a unified definition of knowledge management identifying and emphasising people, technology and the interplay between both. A clear distinction is made between hard and soft aspects and comprehensive discussion is undertaken in relation to knowledge management processes from different perspectives. For example, the technical perspective includes tools, technology and processes. Human and organisational perspective includes organisational learning, business intelligence, culture, Human Resource Management and operational management. The ontological and epistemological and psychological perspectives include definitions of knowledge management and appropriate methods for investigating knowledge management phenomena.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 46	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	2	1
Process	5	5	5	2	1
Activities	1	1	1	1	1
Develop & Test	1	1	1	1	1

Holsapple CW, Joshi KD (2002)

Purpose

The purpose of this framework is to describe knowledge manipulation activities that may occur during the process of knowledge flow, termed by the authors as an episode. This is clearly stated and the authors propose that the framework can be used as a common language for debate about knowledge manipulation, and practitioners could use the framework to consider activities in relation to the design, measurement, control and support of an organisation's knowledge management episodes. The authors provide a robust methodology and empirical work in the development of this framework, but there is no overall theoretical underpinning.

Knowledge Management Process

Overall the authors state that the knowledge management process is directed and shaped by managerial influences, and facilitated or obstructed by environmental influences and organisational resources. Discussion is clear and well reasoned with the authors describing knowledge as a process by which an organisation's joint human-computer system changes the organisation's state of knowledge and produces outputs. They recognise the extent to which a system of knowledge management can be either complex or in some cases fairly straightforward, independent or interdependent. The term

knowledge episode is used to define the process of identifying knowledge need through to satisfying that need, or not as the case may be. This episode can be independent or interdependent with other episodes and will occur at any given time in an organisation. The authors provide a clear methodology, which supports this approach to knowledge management process, however there is no theoretical underpinning.

Knowledge Management Activities

Knowledge management activities are explicitly stated and the authors distinguish between elemental level and higher-level knowledge activities. Elemental refers to the knowledge cycle, for example sharing, creating, identifying, collecting, adapting, organising and applying knowledge. Higher level relates more to strategic approaches. This framework focuses on elemental activities and sub activities, which directly manipulate knowledge and produce knowledge flows within a knowledge management episode. Overall the framework concentrates on activities such as the acquisition, selection, internalisation and utilisation of knowledge in addition to the internalisation and externalisation of knowledge and generating new knowledge. This is broken down further by exploring the sub activities involved, for example, during the acquisition of knowledge, activities to capture include extracting, collecting, and gathering valid knowledge, which is then organised by distilling, refining, orienting, interpreting, packaging, assembling, and transforming. Transferring the knowledge includes activities such as communication channel identification, selection, scheduling, and sending. Internalising involves evaluating and valuing the knowledge to be internalised and identifying the knowledge resources that are to be impacted by the knowledge flow produced. The description of activities is clear and well reasoned using empirical work gathered through the Delphi process. There is no theoretical underpinning.

Development and Testing

Development and testing has been clearly stated and structured using the Delphi approach. This includes a combination of concepts, best practices and literature leading to an initial framework, which was then critiqued and evaluated by a panel of knowledge

management practitioners and academics. During the development phase, the authors carried out a comparative analysis of knowledge management frameworks, identifying various knowledge management activities, which confirmed for them the need for a generic framework of knowledge manipulation activities. During the preliminary phase evaluation criteria and standards were determined prior to starting development of the framework. Three boundaries were defined which were business, descriptive and detail. The business boundary focused on the development of knowledge management within business organisations. The descriptive boundary purely described knowledge manipulation activities in the process of knowledge management. The detail boundary was set as two levels, the first to identify basic knowledge manipulation activities at one level and their sub-activities at the second.

An iterative approach was used in developing the initial framework to account for notions of elemental knowledge found in a survey of literature, matching concepts, ideas, language and their inter-relationships which were compared, organised and unified in an inductive fashion over many iterations. The framework was empirically evaluated using questionnaires and feedback received from a panel of academics and practitioners.

Results and Conclusions

The results and conclusions of the development of this framework are explicitly stated and underpinned with empirical research. A selection of responses are presented and commented upon further by the authors adding to the robustness of this framework. The authors conclude by identifying implications of the framework, within which they discuss the activities that the framework could be used for such as exploring tacit and implicit knowledge, using it as a structure for discussing knowledge management issues and as a basis for communication and sharing of ideas. The authors finally point out that they do not advocate a particular methodology or process to co-ordinate such activities but the various configurations can be combined to define a process or methodology.

Summary

The purpose and subsequent discussion of this framework is explicitly stated, well structured and clear. The methodology based on the Delphi process used by the authors provides validation and adds to the credibility of this framework. Knowledge management process, activities, development and testing are all well reasoned and empirically robust. Theoretical underpinning is applied to specific knowledge activities such as generating knowledge and the sub-activities involved in this process. Overall, however, the framework is not underpinned by any specific theory. The main contribution to be taken from this framework relates to the process and activities that should be considered to implement knowledge flow and manipulation. The empirical research undertaken is robust and provides perspectives on knowledge management that are useful to consider as secondary research in the development of a framework for the evaluation of an organisation's readiness to engage with the concept of knowledge management.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 92	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	1	5
Process	5	5	5	2	5
Activities	5	5	5	4	5
Develop & Test	5	5	5	5	5

Hylton A (2002)

Purpose

This framework is based on a Knowledge Audit (K audit) for knowledge valuation by exploring the tacit knowledge in people's heads and explicit knowledge in the organisation storage systems. The purpose is reasonably clear and structured, however discussion becomes ambiguous particularly in relation to process. The K audit is

described as an evaluation of explicit and tacit knowledge resources and purports to be a systematic and scientific procedure to diagnose the organisational health of knowledge and provide evidence to establish whether organisational knowledge is being maximised. There is no evidence to confirm that this has been achieved. The author refers to two case studies, using these as examples where employers do not know the extent of their knowledge value, and asserts that the K Audit would be beneficial, however there is no explicit empirical work to qualify this and there is no reference to theory.

Knowledge Management Process

The author recommends that the K audit should be the first stage of a knowledge management process because it involves explanation of the entire cycle of corporate knowledge. The emphasis is not on knowledge management process, but how it is evaluated. The author asserts that the K audit, therefore, measures efficiency of the knowledge flow, storage, and return on investment and establishes when particular knowledge is no longer required.

The process comprises three main elements. The first is the HyA-K-Audit, which focuses on people and the knowledge process and includes a survey of people in the organisation. The second is an inventory of current knowledge and is conducted through one to one interviews. The inventory also includes measurement of tacit and explicit knowledge. The third is a knowledge map that illustrates the structure and flow of knowledge, providing the opportunity to identify gaps and weaknesses.

Knowledge Management Activities

Knowledge management activities are referred to in the context of audit activities. These include indexing and categorising tacit and explicit knowledge by establishing the number and categories of knowledge workers, where they are located in the company, what job they do and what professional and academic qualifications they have achieved. Again there is no evidence of empirical work or theoretical underpinning.

Development and Testing

There is no indication of the approach taken to develop this framework, and although the authors imply that the framework has been successfully used, in reference to the case studies, this has not been discussed or referenced.

Results and Conclusions

There are no specific results and the author concludes by emphasising the importance of the audit.

Summary

The purpose of this paper is reasonably clear and presented with clarity, however discussion becomes ambiguous. There is no theoretical or explicit empirical underpinning throughout the paper. The proposal to introduce a process for auditing knowledge in an organisation is logical and practical, however, many of the assertions made by the author are not reasoned and the absence of development and testing and robust empirical underpinning do not engender confidence in what the framework is intended to achieve. This is particularly relevant in relation to the author's 'scientific' measurement of intangible aspects of knowledge management and the extent to which this could be successful. The framework is interesting from an evaluation perspective because it is generally based around an audit procedure, in particular the reference to categorising knowledge workers, where they are located in the company, what job they do and what professional and academic qualifications they have achieved, as well as the knowledge mapping approach.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 33	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	4	3	2	1	1
Process	3	3	2	1	2
Activities	1	1	1	1	2
Develop & Test	1	1	1	1	1

Joshi KD (2001)

Purpose

This is a framework for the systematic study of knowledge management behaviours during decision making. The purpose, methodology and discussion are clear and well reasoned. The framework identifies and characterises the constructs for studying knowledge management behaviours that emerge during decision making and the impact of the behaviour on process outcome. The author applies decision-making processes to knowledge management by reviewing knowledge resources and activities and the type of decision-making processes that may be undertaken according to the circumstances and type of knowledge under consideration. The framework is underpinned by decision theory and a theoretical approach to knowledge management based on the author's own previous empirical research.

Knowledge Management Process

The knowledge management process is briefly referred to in the context of the learning that is achieved during the decision making process and how the learning process alters

an organisation's resources. No further reference in terms of the knowledge management process in relation to the structure of the framework is offered.

Knowledge Management Activities

Knowledge management activities are explicitly referred to as the activities required to meet knowledge needs. These include knowledge selection, acquisition, use, transfer and internalisation. Each activity is described and used in the framework, which cross-references the activities with different knowledge management situations, sources and factors that influence knowledge management.

Development and Testing

Development has been undertaken from literature review primarily in relation to decision making and knowledge management. The framework's theoretical underpinning is derived from decision theory and the author's previous empirical research into knowledge management. Testing and empirical work specifically in relation to the framework produced has not been undertaken.

Results and Conclusions

The author concludes in a general way by highlighting that this framework defines and characterises knowledge management behaviours during decision-making, and provides a basis for further research.

Summary

The purpose, discussion and reasoning about this framework are clear and well presented in a structured way. The knowledge management process is briefly referred to and knowledge management activities are discussed in more depth. There is clear evidence of theoretical underpinning and empirical work from the author's previous research in the development stage. Testing of this framework has not been undertaken. If considered in

the context of evaluation, this framework contributes useful information relating to an organisation's readiness to engage with knowledge management specifically focussing on the decision making process.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 76	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	5	3
Process	3	3	3	3	3
Activities	5	5	5	5	3
Develop & Test	4	3	3	3	2

Kamara JM, Chimay JA, Carrillo PM (2002)

Purpose

This framework has been developed using previous studies into knowledge management processes in the construction and manufacturing industries. The purpose of the framework is explicitly stated as being a tool for the selection of a knowledge management strategy appropriate to the organisational and cultural context of an organisation and was developed within a project context. Drawing on previous literature, the authors review knowledge management presenting a clear and reasoned discussion. There is no reference to any theoretical underpinning.

Knowledge Management Process

The CLEVER framework includes four stages, which may be regarded as the overall process:

- Definition of the knowledge management problem - This stage is descriptive and the characteristics of the knowledge under consideration are defined, the potential users and sources of knowledge, and enablers and prohibitors for users and sources;
- Identify 'to be' solutions - This is essentially a gap analysis of where the organisation is and where it wishes to be in relation to strategy and policy. The outcome at this stage is a set of knowledge management concerns or issues that the user wishes to focus on;
- Identify critical migration paths - This stage defines how the user wishes to proceed and is synonymous with a critical path analysis;
- Select appropriate knowledge management processes - This stage relates to the implementation stage and the most relevant path that should be chosen from a standard list of processes to proceed with a selected strategy. Although the authors refer to processes, this may be more relevant to activities.

Empirical work has been undertaken through a study of knowledge management processes and the methodology used was explicitly stated, but there is no reference to theory. The outcome of this study highlighted that knowledge management in the construction and manufacturing industries lacked formal proactive knowledge management processes. There were, however, some examples of good practice such as the use of project management tools, documentation systems, regular revisions of project plans to learn from lessons of the past and use of certain procurement options. The missing processes derived from this study include identification of high-grade knowledge, making high-grade knowledge explicit and highly controlled, and assistance in selecting appropriate strategies for knowledge management. The authors continue to

refer to processes within the process, which can cause some confusion. They then identify tools of application, which are regarded in this case as activities.

Knowledge Management Activities

Knowledge management activities are not explicitly defined. The authors discuss the application of the framework within which three main tools are described:

- Problem Definition Template (PDT) is used to identify types of knowledge and knowledge management processes are referred to again in addition to those above. These processes are knowledge generation, knowledge propagation, knowledge transfer, knowledge location and access, and knowledge maintenance/modification;
- Knowledge Dimensions guide is introduced as that which identifies the current situation and potential future situation;
- Generic Knowledge Management Process Model is used to facilitate or identify resistors to develop the organisation toward the desired situation. This includes tacit/explicit, individual and shared knowledge and people, IT and paper based knowledge sharing.

There is no reference to theory and with regard to empirical work, this was conducted and has been referred to under knowledge management process.

Development and Testing

The main aims to develop and test the framework were explicitly stated at the outset. These are:

- to explore current knowledge management practices in manufacturing and construction industries;

- to draw out generic structures for knowledge management practices by cross-sector comparisons;
- to develop a viable framework for knowledge management in a multi-project environment;
- to evaluate the framework using real life projects and scenarios supplied by the participating companies.

Drawing on literature the authors reviewed definitions of knowledge management and established the framework for project research. The authors state that the development of CLEVER was undertaken based on empirical research and testing with participating organisations. However there is no further reference or discussion to support this.

Results and Conclusions

The authors conclude by summarising the purpose of the framework, that it is derived from literature and studies in collaborating organisations, though these are not identified. The authors recognise that there are many solutions in relation to various processes of knowledge generation capture and transfer and it was not their intention to introduce another process, however this appears to be exactly what they have done.

Summary

The purpose of this framework is clear and discussed in a coherent manner, although it does appear to be complicated by the interchangeable use of terms, which for the practitioner can cause some confusion. The knowledge management process is identified and activities are referred to as processes within a process with an additional set of activities, which are tools to implement knowledge management. The structure and dual use of the term process can result in ambiguity. The framework is weakened by the lack of theoretical underpinning, and although reference to empirical work in the form of case studies through collaborating organisations has been made, there is no further discussion about these. The main lesson to be learned from this framework is the need for clear

structure and consistent use of language when developing a layered approach to knowledge management. The approach taken provides a reasonable example to draw ideas from the Knowledge Dimensions Guides.

Score Key	<i>1 = lowest possible score 5 = highest possible score.</i>				
Total Score 54	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	1	2
Process	4	3	3	1	3
Activities	4	2	2	1	3
Develop & Test	3	2	2	1	2

Knight T, Howes T (2003)

Purpose

Overall the purpose of this framework is clear, to assist in consultancy and investigation into knowledge management in organisations. The framework comprises a tool set to structure thinking and is intended by the authors to provide a holistic approach to knowledge management at a strategic level. As discussion unfolds, however, the approach becomes ambiguous, partly because although the authors emphasise the importance of addressing knowledge management at a strategic level, they tend to place equal emphasis on individual projects and the process of project management. The background and introduction to the framework contains reference to previous literature and theory, but this does not appear to have been directly applied to the framework.

Knowledge Management Process

The knowledge management process has been clearly identified as a five-stage process, which comprises:

- a definition of pressures on organisations and assessment of the potential for leveraging knowledge to deliver corporate objectives;
- development of strategy by assessing the current state of knowledge and defining the knowledge vision and benefits;
- design of the new order of the organisation, which includes leadership, people issues, process, technology and information -
 - leadership includes responsibility for the delivery of a knowledge management programme;
 - people include consideration for behaviours, communication and knowledge sharing, skills and cultural issues;
 - processes involve analysis of business process to improve knowledge identification, use, creation, sharing and recording;
 - technology is the IT tools that support knowledge management;
 - information refers to the relevance, availability, context and quality of information and IT to support this.
- implementation and planning for change, including budgets and priorities. At this stage the authors argue that it is unlikely for a strategy to be solely top down and reach across the organisation. It is more likely to build from the bottom or middle of the organisation;
- an assurance that the expected benefits are realised and relevant resources are committed to identifying future opportunities.

The authors emphasise project management, benefit management and change management and explicitly state that the framework is a model for knowledge management programmes. In addition links are made between workgroup level and overall organisational strategy level. Discussion is clear and well presented. There is no

evidence of theoretical underpinning. The authors indicate that empirical work has been conducted through use of the framework in organisations from which adjustments have been made periodically when required.

Knowledge Management Activities

Knowledge management activities are not explicitly highlighted but can be deduced from the guidance offered about the process. For example, at each stage of the process the authors both propose and provide, where relevant, activities such as surveys, self assessment tools, training and other analytical tools, which will draw out the activities necessary to meet the process.

Development and Testing

Initial development of the framework has been undertaken based on a literature review. The literature review, however, does not appear to have been explicitly and directly applied to the stages of the framework. Testing of the framework has been undertaken based on the authors' experiences of using the framework in organisations, of which specific examples are provided. The authors provide a methodology of how the framework was used and what developments or adjustments were made from inception to the current state. There is no indication of theoretical underpinning.

Results and Conclusions

In conclusion the authors review and summarise the stages of the framework again and follow this up with general discussion about knowledge management in the current business world and the potential difficulties organisations might face, which knowledge management could address.

Summary

The purpose of the framework has been clearly stated, providing a framework comprising a set of tools to structure thinking and implementation of knowledge management in an organisation at a strategic level. Although the intended purpose relates to organisational strategy, subsequent discussion focuses more on knowledge projects within an organisation with comment about linking these to strategy. At which point discussion becomes disjointed. The knowledge management process is explicitly referred to and clearly discussed and justified in a practical sense, but contains no reference to theory. Knowledge management activities are not explicitly referred to but can be deduced from the guidance offered to underpin the process and these include surveys, self-assessment tools, training and other analytical tools.

Empirical work throughout, including development and testing is based specifically on the authors' own experiences and descriptions of case studies are offered.

There is no clear conclusion and the authors purport to present the lessons learned, however a summary and review of the stages of the framework is presented with a reaffirmation of the framework's benefits. This is followed by a general discussion about knowledge management in the current business world. This framework significantly contributes to the concept of evaluating an organisation's Knowledge Management Readiness. The tools and guidance provided offer a practical approach that could be adapted.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 75	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	4	4	2	5
Process	5	5	5	1	5
Activities	4	3	2	1	5
Develop & Test	5	4	4	1	5

Kwan M, Balasubramanian (2002)

Purpose

The authors present a knowledge management system, the purpose of which is explicitly stated. It is intended to provide an integrated workflow support capability that captures and retrieves knowledge within context and then organises the knowledge and context in a knowledge repository. A clear methodology and rationale for undertaking this approach is provided through discussion of secondary research and literature. There is no theoretical underpinning.

Knowledge Management Process

The knowledge management process is specifically discussed as one aspect of the overall proposed system (KnowledgeScope) and is a model for knowledge in context, which includes process designs, process instances and knowledge resources that are captured, stored and retrieved from a repository. Knowledge management is categorised into three types and the authors propose that a knowledge management system should organise knowledge around organisational processes and the processes are the scope of an application. Each application then contains the three types of knowledge which are

process knowledge, case knowledge and knowledge resources. This is clearly discussed and although a technical approach to knowledge management, the authors consider the human interface with technology.

Emphasis is placed on the process of knowledge capture, sharing and utilisation. Through a review of knowledge management technology intended to underpin the process, the authors identify both the technical weaknesses and consider the failures that have been experienced in relation to human interface with the technology. The technology reviewed includes knowledge repositories, process memory systems and organisational memory information systems. Discussion is presented in a balanced and understandable manner for non-technically minded users, which engenders understanding about the system being proposed.

The overall system is divided into four perspectives:

- functional perspective which asks what tasks are performed and why;
- informational perspective describes the information used and produced by tasks in the process and relationships between them;
- organisational perspective answers who, where and with what resources tasks are performed;
- behavioural perspective answers questions about when and how tasks are performed.

The development of the process has been undertaken through empirical work, but there is no evidence of theoretical underpinning.

Knowledge Management Activities

Knowledge management activities are not explicitly referred to, but the system concentrates on the overall process and sub processes, which can also be activities.

Development and Testing

The system has been developed based on secondary research and literature to establish the rationale at every stage of the system development. Testing has been undertaken by applying the system to a case organisation and evaluating its performance. There is no explicit theoretical underpinning.

Conclusion

The authors conclude by highlighting the results of testing and recognising the weaknesses in the system, proposing further development work to improve. The weaknesses identified include the need for additional information in relation to specific context to be made available. For example, geographical locations, strategic intents and customers. In addition the authors point out that provision of this system does not entirely address knowledge management in an organisation as this requires culture change and a change in mental models where the workforce begin to think in terms of knowledge management.

Summary

The purpose, discussion and reasoning about the development, implementation and evaluation of this system are robust. During the development stage specific applications of the system have been further discussed and benchmarked against current systems and technology available to justify the need for this particular approach. The knowledge management process is discussed in relation to business processes and what can be achieved within the scope of this model. Knowledge management activities are not explicitly referred to, but easily derived from sub processes. Empirical work has been undertaken by implementing and evaluating the system in a case organisation from which weaknesses were identified and proposals to improve presented. The attention to the technical interface and the systems perspectives that comprise the process provide a useful contribution to evaluation.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 79	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	1	5
Process	5	5	5	1	5
Activities	4	3	3	1	5
Develop & Test	5	5	5	1	5

Kwang KL, Pervaiz KA, Mohamed Z (1999)

Purpose

The purpose of this framework is twofold, firstly to measure knowledge management and to use the results for leveraging an organisation against its competitors and secondly to improve customer satisfaction. The authors provide a brief example of knowledge management distinguishing between tacit and explicit knowledge and apply quality strategy to knowledge management, which is then connected with a cost model to produce the actual framework. There is no theoretical underpinning or empirical work. Discussion is weak with many assertions made and inadequate attention to knowledge management literature.

Knowledge Management Process

The overall knowledge management process is not referred to, but the activities as indicated in the next section could be identified as the process with further activities highlighted to meet the requirements of the process.

Knowledge Management Activities

Knowledge management activities or process are explicitly referred to and connected with a plan-do-check-act cycle associated with quality strategies as follows:

- capturing or creating knowledge (plan);
- sharing knowledge (do);
- measuring the effects (check);
- learning and improvement (act);

In each case additional activities are briefly described to achieve the main activities or process as listed. The main activities are then cross-referenced with a cost model to develop a matrix or framework. The cost model includes:

- customer which specifically refers to the information and learning that can be derived from the customer base;
- organisation which relates to the key skills of people and how skills are shared;
- suppliers, which explores the cost, quality and delivery service from suppliers, however there is no mention of the opportunity to share or glean knowledge from suppliers;
- technology refers to how many PCs there are and whether they are linked and used effectively.

Overall there is inadequate discussion of the knowledge management activities and the rationale behind the interaction with the cost model. A surface level description is offered and there is no reference to empirical work or theoretical underpinning.

Development and Testing

Development has been undertaken in a fairly superficial way and although some reference to literature has been made, it is inadequate for reasoning and justification of

the statements made. There is no indication that empirical work and testing has been undertaken.

Results and Conclusions

The author concludes by highlighting the benefits of considering knowledge management as a quality strategy to improve the customer experience, but the purpose of the framework does not indicate this as being the intention, but part of the process.

Summary

This is a fairly superficial presentation of a knowledge management framework with a clear purpose, but ambiguous outcome. Throughout, there is little discussion, and limited evidence or reasoning to support any of the assertions made. Although some literature has been referred to, the extent of what is being proposed requires more in-depth discussion and reasoning for it to be in some way valid. Statements are unsupported by empirical work and theoretical underpinning. The contribution that this framework makes to the evaluation of an organisation's readiness to engage with knowledge management relates directly to the application of a quality process and potential quality audit.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 41	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	2	2	1	1
Process	4	3	2	1	1
Activities	5	4	3	1	1
Develop & Test	1	1	1	1	1

Lee JH, Kim YG (2001)

Purpose

This is an integrated framework intended to build organisational capabilities of knowledge management. The purpose is explicitly stated and discussion is undertaken with reasoning and clarity based on a sound review of knowledge management literature and theory. The authors consider resource-based theory, and why this is becoming more important in knowledge based organisations. In addition life cycle theory is related to the different stages of knowledge management which provides understanding about the overall framework. From this review the authors propose four key stages of the knowledge management process.

Knowledge Management Process

The knowledge management process is explicitly referred to as initiation, propagation, integration and networking. These have been chosen based on resource based theory and life cycle theory and are described and reasoned as follows:

Initiation stage - This is the stage whereby organisations begin to recognise the importance of organisational knowledge management and prepare for organisational wide knowledge management efforts. To achieve this, the organisation requires, for example, commitment, voluntary involvement and long term planning.

Propagation stage - This is when organisations begin to invest in their knowledge infrastructure to facilitate knowledge activities such as creating, sharing, and storing and utilising knowledge. At this stage a complete organisation wide knowledge management process is identified including appropriate technology.

Integration Stage - At this stage organisational activities are institutionalised as daily activities. As more in the organisation become familiar with knowledge activities, the knowledge activities increase.

Networking stage - This is an external integration stage where organisational knowledge is networked with suppliers, customers, research firms and universities. At this stage the focus of organisational efforts becomes more specialist on core knowledge and other required knowledge is outsourced.

The knowledge management process is well reasoned and theoretically underpinned.

Knowledge Management Activities

The activities needed to achieve each stage in the process are clearly identified from a management perspective and labelled organisational actions. These are well structured and organised as follows:

- Initiation - Dissemination of the needs of knowledge management.
Assess current problems of knowledge management.
Share visions and goals.
Compile long term plan.
Conduct benchmarks pilot projects.
- Propagation - Set up knowledge management process.
Build reward system.
Develop HRM programmes.
Develop knowledge typology.
Build knowledge management system.
Conduct events to activate knowledge activities.
- Integration - Evaluate effectiveness of knowledge.
Scan changes in environment.
Monitor and control activities.
Define and focus on core knowledge areas.
Disseminate best practice.

- **Networking** - Analyse internal and external environment.
Develop alliances with partners.
Share visions and goals with partners.
Link knowledge management with partners.
Facilitate inter-organisational knowledge sharing and collaborations.

The actions to achieve each activity are discussed with reasoning and recognising that different organisations may approach this in a different way, the authors provide guidance rather than prescription.

Development and Testing

Development of this framework was undertaken through a literature review and tested through empirical research with 21 organisations, 10 Korean and 11 International cases. The methodology to conduct this research and testing has been made explicit and the authors recognise the level of subjectivity, which they attempted to reduce through triangulation using three external evaluators who are familiar with knowledge management.

Results and Conclusions

The authors conclude by reviewing what has been achieved in relation to this framework and recognise the limitations, such as subjectivity and their own personal biases, however the methodology used has attempted to deal with this. They propose more solid empirical validations such as a cross sectional survey and longitudinal case study.

Summary

Overall this is robust framework grounded in theory and empirical research. The theoretical base is a combination of resource based theory and life cycle theory. Knowledge management processes are explicitly stated and reasoned. Knowledge

management activities comprise actions that are required in an organisation to achieve the objectives of the process as well as specific knowledge activities. Development and testing has been undertaken using a clear methodology and critique. The main weakness in this framework is an assumption that individuals within an organisation will engage and commit to the concept of knowledge management. The authors do not consider the power and politics associated with knowledge sharing, but overall provides a well structured framework that could contribute significantly to the development of an evaluative framework.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 100	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	5	5
Process	5	5	5	5	5
Activities	5	5	5	5	5
Develop & Test	5	5	5	5	5

McAdam R, Reid Renee (2001)

Purpose

The purpose of this framework is clear, to identify and describe the key dimensions of knowledge management using a socially constructed knowledge management model, with the intention of determining perceptions of knowledge management in SMEs and large organisations. The authors have classified knowledge management into three categories, which are Intellectual Capital Models, Knowledge Category Models and Socially Constructed Models for the knowledge management process. The Socially Constructed Model was chosen because of the breadth of definition of knowledge and the intrinsic link with the social and learning processes in organisations. Discussion,

reasoning and theoretical underpinning as to how the three categories have been chosen is very brief, though what is available is presented with clarity. The final model that the authors propose has been adapted from Demarest (1997).

Knowledge Management Process

The knowledge management process is clearly referred to in the context of four key dimensions in the model. The process, therefore, is:

- Knowledge construction which includes scientific and socially constructed knowledge;
- Knowledge embodiment which includes the process of social interchange where knowledge is embodied within the organisation;
- Knowledge dissemination which is the process of sharing knowledge throughout the organisation and its environment;
- Knowledge use which is the process of using knowledge to economic advantage in regard to organisational outputs.

This is presented with clarity and reasoning, and empirical work has been undertaken to determine perception of knowledge management. There is no theoretical underpinning.

Knowledge Management Activities

Knowledge management activities are not referred to.

Development and Testing

This model is used as a framework to undertake research into perceptions of knowledge in SMEs and large organisations through research survey and workshops. The model is adapted from Demarest (1977), but there is no indication of what adaptations have been made. Within the scope of the model, 296 questionnaires were distributed and 95 returned of which 49 were SMEs and 46 were large organisations. From the results of

the survey eight workshops were held and the results presented. There is no evidence to indicate the effectiveness of the model over and above the questionnaire. In terms of considering perceptions of knowledge management the questionnaire approach may be useful in relation to assessing knowledge management readiness, but the model itself does not appear to provide anything more than the questionnaires.

Results and Conclusions

The conclusions from this model and associated survey identified the usefulness in establishing organisational perceptions of knowledge management. The authors propose that the four key dimensions in the model are representative of approaches to knowledge management in both large organisations and SMEs. When comparing large organisations and SMEs, the model was used to draw out differences in approaches identifying that large organisations are more people based knowledge oriented and SMEs were more mechanistic.

Summary

The purpose of this model is clearly stated and discussion progresses with clarity and reasoning. The categories of knowledge management that the authors propose appear to be limited and there is inadequate discussion to justify why the three categories have been chosen. The socially constructed model is an adaptation from Demarest (1997), but there is no indication of what adaptations have been made, therefore the development of the actual model has not been adequately discussed. A research methodology based on survey research and workshops is presented, but there is no evidence to indicate the effectiveness of the model over and above the use of a questionnaire, which explores perceptions of knowledge management in large organisations and SMEs. Knowledge management processes have been referred to within the context of four key dimensions of the model and knowledge management activities have not been included. Considering this framework in the context of an evaluation of an organisation's Knowledge Management Readiness, the distinction between category models such as Intellectual Capital Models, Knowledge Category Models and Socially Constructed Models provides

a useful perspective to consider and explore further. There is no explicit theoretical underpinning in relation to the model.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 47	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	3	1	1
Process	4	3	3	1	1
Activities	1	1	1	1	1
Develop & Test	5	5	3	1	1

Merali Y (2002)

Purpose

The purpose of this framework is not entirely clear at the outset. In the first instance, the author proposes a cognitive congruence framework intended to reconcile contentious issues in knowledge management literature. It is then proposed that the framework could be used to explain the relationship between cognitive, action and social aspects of the knowledge management process in the organisational context and can be used as a management tool. The framework has been developed in the context of differing views on knowledge management. As discussion unfolds, it becomes clearer that the framework emphasises individual and collective knowledge sharing. Although theory is referred to it is not robustly applied in this case. Empirical work has been undertaken in a case organisation, though the approach used has not been made explicit

Knowledge Management Process

The knowledge management process is considered in the context of socially situated processes of knowledge management by connecting the cognitive, social and action dimensions. The framework contains a cycle that includes:

- Schema, which is the knowledge structure representing organised knowledge about an information domain and includes how knowledge is retrieved and used. Overall, Schema contains a collection of interconnected beliefs and perceptions;
- Self-concept which is a perception of one's identity in relation to other individuals or groups;
- Relationship Scripts, which refers to relationships between individuals, inter organisational knowledge networks, credibility and filtering of information. This can be divided into a macro and micro level. The macro level is useful for understanding how an organisation perceives itself within its environment and the micro level helps make sense of the social learning processes;
- Relationship Enactment, which links the individual with the social dimension and is scaleable from the individual to the collective. Collective enactment is the process by which the self-concept is realised, experiences are formed and learning takes place.

The process is confusing, because it is not clear how Schema, Relationship Scripts and Relationship Enactment differ from each other in practice. Theory is referred to, but not adequately discussed in a clear and reasoned way.

Knowledge Management Activities

Knowledge management activities are not referred to in this framework.

Development and Testing

The framework was applied to three different organisations and used to identify gaps in current levels of collective knowledge as compared to that which was necessary for success in circumstances of change and development in each organisation. The authors do not explicitly indicate the methodology used and in essence offer a descriptive and retrospective evaluation of the success of applying the framework. There is no critique and the absence of a methodology obstructs understanding of this framework and how to apply it.

Conclusion

The authors conclude by stating that the framework is a sense-making device for studying organisations in dynamic contexts and reconciling and co-ordinating individual and collective actions. As a framework for studying organisations, it may be effective, but the absence of the methodology and critique means that the extent to which this was achieved is questionable. Further, the authors originally proposed that this was a cognitive congruence framework intended to reconcile contentious issues in knowledge management literature. There is no evidence to suggest that this was achieved.

Summary

Although the purpose of this framework was made clear, as discussion unfolds it becomes less evident as to what is being proposed. This is further exacerbated by the weak discussion and an expectation that the user would know how to utilise the framework, for example there is no explicit methodology to explain how the framework was used in case organisations. Further, there is no indication of how knowledge management could be implemented in an organisation. The framework appears to be based on social psychology and for the standard practitioner offers little support in application except as an exploratory exercise, which in itself is limited. The authors do recognise the shortcomings of the framework and point to the dangers of ignoring environmental issues, but offer little indication as to how to address these.

There is no explicit theory underpinning many of the assertions that the authors make, but reference is made to learning theory and through the literature review various other theoretical underpinnings are briefly referred to. This is not however robust and structured in such a way that the reader easily understands the authors perspective in the development of this framework.

In relation to evaluation of an organisation's readiness to engage with knowledge management this framework appears to be a useful tool for the evaluation of current knowledge and identification of new knowledge needed in the change and development of an organisation. However, further work would be necessary to realise its full potential.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 47	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	2	2	2	2
Process	4	3	3	2	3
Activities	1	1	1	1	1
Develop & Test	3	3	3	2	3

Mullich J (2001)

Purpose

Overall, the introduction and discussion about any proposed framework is unstructured, with weak links and no conclusions, which makes it extremely difficult to ascertain the purpose of any intended framework (if it exists). It is in fact unclear if there is a framework at all. The importance of distinguishing between knowledge management and information management is stated, with no further discussion about the differences

between the two or the consequences if the distinction is ignored. A subsequent comment points to the need to provide better information to achieve positive results, yet the focus is about growing a knowledge management system. Initially, slow incremental implementation of a knowledge management system by means of pilot projects is proposed, but the perspective shifts quickly to being organisational-wide. Discussion therefore is ambiguous and there is little or no reference to literature. There is no theoretical underpinning or empirical work throughout.

Knowledge Management Process

There is no explicit knowledge management process discussed, although components are mentioned that might be considered implicitly to be activities within a knowledge management process. No explicit links are made between the activities. Reference is made to project processes and business processes, and the process of providing information, but there is no focus on the knowledge management process.

Knowledge management is regarded as impacting on business process, rather than being regarded as an integral part of the process and one comment explicitly states that during the implementation of a knowledge management system, people want information about using technology more than the knowledge management process.

Knowledge Management Activities

Apart from brief comment about knowledge transfer and collaboration, knowledge management activities are not evident and have not been discussed in a structured manner. However, there is a set of bullet points, which the author promotes as a means to involve people, and consequently, as a means to successful knowledge management initiatives.

Development and Testing

The author has not presented a specific framework or proposal for testing.

Results and Conclusions

There are no real results or conclusions. A list of bullet points is presented that appear to be the factors that could be considered in the development of a knowledge management system.

Summary

This is an anecdotal presentation of a knowledge management system with an ambiguous purpose. Throughout, there is no explanation, very little discussion, and no real evidence or reasoning to support any of the assertions made. Statements are unsupported by explanation, discussion, evidence, or reasoning. There is no overall research design and no theoretical underpinning or empirical support is provided.

The list of bullet points are the nearest this gets to a 'system', and, given the previous comments, these cannot be considered to be robust or reliable.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 20	Explicitness	Clarity	Reasoning	Theory	Empirical work
Purpose	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>
Process	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>
Activities	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>
Develop & Test	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>

Newman B, Conrad KW (2000)**Purpose**

The purpose of this framework is clear, to characterise knowledge management tools such as methods, practices and technologies available to knowledge management practitioners. The authors describe the framework as a classification framework that incorporates principles, theories and models that have been refined to support the author's approach to knowledge management. Theory however is not explicitly applied. Discussion continues with clarity and recognition of the association between people and technology and consideration of knowledge management as more of an integrating practice than a new management practice. The authors assert that the framework has its theoretical roots in complex systems and human knowledge interactions, though they do not expressly discuss this. They propose that the framework can be used to support internal development efforts to map specific tools and technologies according to their potential roles in knowledge flows; identify functional gaps; determine integration points; endorse efforts that seek to develop technologies with a specific function. There is no evidence of empirical work to underpin this.

Knowledge Management Process

The knowledge management process is drawn out in relation to the knowledge flow, with activities to produce, manipulate and use knowledge. There is no theoretical and empirical underpinning in relation to process.

Knowledge Management Activities

The author organises knowledge flows into four activities, which are knowledge creation, retention, transfer and use. These activities are clearly described in more detail individually. In addition, explicit, implicit and tacit knowledge artefacts are described. Explicit knowledge artefacts include hard-based information for example reports, books, and files. Implicit knowledge artefacts are described as information that can not be explicitly captured but can be inferred. Tacit knowledge artefacts are those which can

not be codified and include unconscious awareness as much as knowledge that one is consciously aware of.

The authors assert that individual, automated and organisational agents make knowledge artefacts active. Individual agents relate to people and may function independently or as part of a team and are core to the knowledge process. Automated agents refer to technology, and organisational agents are more complex because they relate more to the organisation's retention and transfer of knowledge, which can be both technical and human, and incorporate culture. The authors continue by discussing the behavioural differences between agent types and how different agents may deal with knowledge, whether codifying, contextualising or sharing. The framework organises, applies and integrates knowledge artefacts and agents to enable relevant selection of tools, and the development and deployment of knowledge. Although rationally described, there is no evidence of empirical work, theoretical underpinning and little reference to literature.

Development and Testing

There is no indication of empirical testing of this framework and little reference to previous literature. The framework therefore remains conceptual.

Results and Conclusions

There are no specific results and the author concludes by proposing how the framework could be used, encouraging the reader to apply it and feedback to the authors. At this stage comment is made that further descriptions of the theoretical underpinnings will be undertaken in the future.

Summary

The purpose of this paper is explicitly stated and discussion continues with clarity and in a logical manner, however, there is an absence of theoretical and empirical underpinning and little reference to literature throughout. The knowledge process is briefly mentioned,

but the majority of content focuses on knowledge management activities, which are described in some detail. It appears that development has been progressed from the author's own perspective and the framework has not been tested. The authors conclude by challenging the reader to apply the framework and feedback their perspectives. The most interesting contribution to be gained from this framework relates to the author's perspective on the various agents, which are individuals, automated and organisational agents. The recognition that individual agents may function differently when in a team based situation, when interacting with technology or at an organisational level may be an important consideration when evaluating an organisation's readiness to engage with knowledge management. For example, the impact could require different management approaches and different levels of appreciation in terms of the dominant and sub cultures of the organisation.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 44	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	3	1	1
Process	2	3	2	1	1
Activities	5	5	3	1	1
Develop & Test	1	1	1	1	1

Pérez Pérez M, Sánchez AM, Carnicer PL, Jiménez JV (2002)

Purpose

The purpose of this framework is explicitly stated, to study the potential feasibility to telework knowledge tasks and jobs. Analysis of knowledge tasks is undertaken

according to the knowledge process, which includes generation, codification, storage and transfer. Overall discussion progresses clearly and is well reasoned, based on a review of literature and previous empirical research in relation to teleworking. The methodology used to develop the framework is presented, resulting in a clear and understandable framework, with the exception of one area of discussion relating to an analysis model of knowledge tasks or processes in relation to variables and values. This element of the framework is disjointed and ambiguous. There is no theoretical underpinning provided.

Knowledge Management Process

The author assesses and discusses knowledge management literature to establish the most appropriate knowledge management process for the framework. The knowledge management process is explicitly stated as being:

- Knowledge Creation;
- Knowledge Acquisition;
- Knowledge Retention;
- Knowledge Distribution.

This is clearly discussed with the addition of Information Communication Technology and information in the context of supporting the process. There is no theoretical underpinning or empirical work.

Knowledge Management Activities

Knowledge management activities are referred to as the activities undertaken in order to achieve the requirements of specific roles in the context of knowledge roles and in relation to the feasibility of these roles for teleworking. The author states that the choice of roles and tasks have been derived from knowledge management literature, but no further empirical work appears to have been undertaken to validate this choice.

Development and Testing

Development of this framework has been undertaken through literature review and empirical work has been undertaken specifically in relation to teleworking. There is no evidence of empirical work having been undertaken to test the final framework.

Results and Conclusions

The author concludes by summarising the purpose and potential benefits of the framework and proposes further research to empirically test it based on case study and surveys, to both validate and extend the framework.

Summary

Overall the purpose of this framework is clear and although well discussed and reasoned through reference to literature, there is no explicit theoretical underpinning. The knowledge management process is established from a review of literature and knowledge management activities are referred to as knowledge tasks associated with specific jobs. Development has been undertaken in a clear and reasoned way based on literature and empirical work in the area of teleworking. The authors provide a brief methodology, which assists in understanding the approach taken. Empirical work to test the final framework has not been undertaken and there is no theoretical underpinning. This framework is useful because it contributes to one aspect of the modern organisation that relates to mobile working, telecommunicating and virtual working in the context of knowledge management.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 55	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	3	1	2
Process	5	5	5	1	3
Activities	3	3	2	1	3
Develop & Test	2	2	2	1	1

Pervaiz K, Kwang KL, Mohamed Z (1999)

Purpose

The purpose of this framework has been made clear and it is intended to measure knowledge management through screening and evaluation, incorporating tactical and strategic elements, measuring and leveraging knowledge management for competitive advantage. Following a brief introduction to knowledge management the author continues by discussing measurement, including definitions of measurement, development of measurement, performance measurement and measurement systems. The paper continues with the author applying knowledge management to a measurement system, in particular the Deming 'plan, do, check, act' model, but does not adequately reason why this approach is better than others. Overall discussion is weak, with descriptions of techniques used in measurement taking precedence over knowledge management. There is no evidence of theory and empirical work.

Knowledge Management Process

The authors refer to the knowledge management process in the context of applying the Deming measurement model:

- capturing or creating knowledge (plan);
- sharing knowledge (do);
- measuring the effects (check);
- learning and improving (act).

The main emphasis is on measurement and not on the knowledge management process. There is no discussion as to why the Deming model would be chosen over other measurement techniques and this appears to constrain the broader aspects of knowledge management. These however seem to be picked up by applying another measurement model, the cost model, when considering activities.

Knowledge Management Activities

The authors identify knowledge management activities by applying a cost model, which includes customer, organisation, suppliers, technology and provides examples of activities associated with each area. From this a measurement matrix for knowledge is introduced. The authors assert that the matrix provides a deeper understanding of knowledge management, including hard and soft aspects, and links knowledge management to policy and strategy. There is no discussion or evidence to substantiate this, no theoretical underpinning or empirical work. Additional activities that relate to potential areas for measurement are presented, though these are not included in the matrix and are speculative in nature.

Development and Testing

Development of the framework has been undertaken based around measurement techniques and there is no indication that empirical work and testing has been undertaken. There is no evidence of theoretical underpinning.

Results and Conclusions

There are no specific results and the authors conclude by presenting more questions in relation to measurement, additional knowledge management performance measures and a list of bullet points to reinforce the importance of knowledge management.

Summary

The purpose of this framework is clearly stated and the authors present models of measurement, intended to screen and evaluate knowledge, but the approach overall appears to be fragmented. The knowledge management process is referred to in the context of measurement using Deming and the authors apply a cost model to knowledge management activities. This approach appears to ignore the broader complexities and richness of knowledge management, which the authors appear to recognise in their conclusion, when they introduce further knowledge management performance measures, highlighting the fragmentation and incompleteness of this framework, rendering the final matrix as unconvincing.

The authors have not clearly discussed and clarified why they have taken a particular approach to either their choice of measurement or approach to knowledge management. There is no theoretical or empirical work throughout, any clear approach to development and the framework has not been tested. Considering this framework in the context of an organisation's readiness to engage with knowledge management, the key contribution relates to measurement of the organisation's ability with a view to undertaking knowledge management, rather than assuming that the organisation is already fully engaged with knowledge management.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 34	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	4	3	1	1	1
Process	4	2	1	1	1
Activities	4	2	2	1	1
Develop & Test	1	1	1	1	1

Robertson S (2002)

Purpose

The purpose of this approach is explicitly stated as a description of two knowledge sharing systems and exploration as to why they were used differently. However, the author refers to knowledge sharing systems, knowledge management systems and information systems, using the three terms interchangeably, making no explicit distinction between these concepts. A comprehensive description of an IT system is provided, that was implemented in a first case scenario and modified in a second, as a result of a merger between two companies. As discussion progresses, it loses clarity and appears to be more about one IT system that has been modified and developed rather than two systems. There is no overall theoretical underpinning and empirical work is limited to the boundaries of the merging organisations, presented in a retrospective and descriptive manner.

Knowledge Management Process

The author draws on previous experience of developing and implementing an IT system, providing clear detail about the capabilities of software. There is no reference to the overall knowledge management process and little use of literature in discussion about the

use of the chosen software. Although the importance of people, teams and collaboration is explicitly stated, there is no further discussion and the focus is on IT based information sharing, and interaction with the IT system. There is no reference to theory and empirical work specifically in relation to the knowledge management process.

Knowledge Management Activities

Knowledge management activities have not been referred to except in the context of implementing a system and accessing information through the use of ICT. The author expressly includes hard data based activities such as document storage, search capability, security features and web based software. There is no reference to theory and empirical work is based on the author's perspective within the context of the merging organisational IT systems.

Development and Testing

The approach used in development and testing involves a description of the author's experience in developing an IT system, which is company focused and incremental. The author highlights the need for a participative approach with key user groups to design and develop the system, but there is no overall design for this development and no indication of testing or benchmarking beyond the confines of the organisation. The author highlights issues that are related to the implementation and evaluation of a knowledge sharing system, which he suggests have been collected through interviews with users, however there is no methodology and context in which this information has been collected and no reference to theory.

Results and Conclusions

The author provides results to indicate increased use of the second stage modified IT system and reasons as to why this has been achieved. These include participation and discussion with users to achieve the most relevant design of the system and maintenance of a web site with living documents to ensure continued contribution. Although the

results indicate a high level of human issues including communication, there is no discussion about this aspect of knowledge management apart from interaction with the system. In the final conclusion the author identifies a list of activities that relate to information sharing, but again confuses the reader by explicitly referring to knowledge management, when in fact the content is about an IT system.

Summary

Overall, the purpose of this approach does not fully reflect the content, which is further exacerbated by the interrelated use of terms, for example knowledge management, information systems, knowledge sharing system. This is an experiential and descriptive account of the implementation of an IT system, based in a specific organisation. Although explanation, reasoning and evaluation are provided to a limited extent, there is little empirical support beyond the organisation and reference to empirical work contains no indication of how this information was collected. There is no overall research design and theoretical underpinning. A description of the development and implementation of an IT system and software is provided, with the implication that knowledge management is an IT system, yet there is no reasoning to underpin this perspective.

The main contribution this model offers to the development of an evaluation framework is the need for a participative approach when evaluating the current situation, and designing and implementing an IT system for information sharing in an organisation. This approach implicitly contains evaluation and in this case is specifically focussed on an IT system.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 30	Explicitness	Clarity	Reasoning	Theory	Empirical work
Purpose	3	1	1	1	2
Process	2	1	1	1	1
Activities	2	2	1	1	2
Develop & Test	2	2	1	1	2

Snowden D (1994)

Purpose

The purpose of this framework is to provide a context for the practices of knowledge management and a perspective for the role of intellectual capital assets within an organisation. In establishing the purpose of the framework, the author clearly distinguishes between knowledge and information and establishes the dimensions of knowledge management from individuals and judgement to communities on one axis and from tacit to explicit knowledge on another axis. The author then continues to consider a perspective on knowledge management through decision making, highlighting that the balance between tacit and explicit knowledge needs a model of decision making for example the uncertainty matrix. The uncertainty matrix contrasts uncertainty of objectives with uncertainty of cause and effect, providing four environments each requiring a different balance of tacit and explicit knowledge. Further discussion is not undertaken about this matrix, nor is it referenced. There is no explicit theoretical underpinning or empirical work.

Knowledge Management Process

The author refers to four key elements, as the process within which knowledge management is progressed. The elements are:

- knowledge mapping;
- competence creation;
- intellectual capital systems;
- organisation change.

Knowledge mapping is a process of discovery through the use of knowledge and includes judgements and decisions. For example, decision making creates a picture of how information flows and the results can be mapped linking different decision processes in the organisation. Knowledge mapping also includes consideration for participation, communication, team formation, and creation. The author recognises that whilst this is appropriate for explicit knowledge, the process for tacit knowledge is more complex and in this sense considers competence creation.

With regard to competence creation, it is the authors' view that tacit knowledge assets can be made explicit and obstructions to this process may include the mystification of an individual's knowledge, whereby the individual wishes to maintain an authoritative position. However other tacit knowledge can be made explicit through communities and as such the author proposes competence creation, which relates to communities of tacit knowledge holders. Communities can be developed according to the needs of the organisation and based around individuals who have a natural professional affinity. This can be seen in organisational structures, however, the author recommends that such communities should be time dependent. If they exist too long they are likely to become part of the organisation structure and this should be avoided, as the process of knowledge sharing will diminish and recommends that communities should be formed around a time dependent task. The author provides no empirical evidence or theoretical underpinning to justify this assertion.

Intellectual capital systems are stated by the author as one of the most common knowledge management projects. Intellectual capital systems are generally IT based, but should be developed through effective knowledge mapping and creation of communities of competence to ensure effective use of IT.

Organisation change is the final stage of the process and relates to the creation of an organisation that is knowledgeable and capable of sustained learning. This process includes specific activities that are highlighted below.

Knowledge Management Activities

Knowledge management activities are referred to within the context of organisation change only. Activities include learning contracts, mentoring, self-development, and network management, training audits and best practice exchange. The author points out that best practice exchange is a beneficial covert method of knowledge exchange and recommends this as an entry level to knowledge management in an organisation. This approach is relatively inexpensive and encourages both tacit and explicit knowledge exchanges. There is no indication of empirical work or theoretical underpinning to support this perspective.

Development and Testing

There is no indication of the methodology used to develop this approach and there is no evidence of empirical work and testing having been undertaken in relation to testing.

Results and Conclusions

The author does not provide a conclusion, but notes are provided and intended to introduce the knowledge management practitioner to further reading.

Summary

This purpose of this framework is clear and discussion progresses with clarity, however the reasoning and depth of discussion is brief. The knowledge management process is made explicit, and knowledge management activities are limited to the context of organisational change only. There is no indication of development and testing and there is no theoretical or empirical underpinning. Overall, the approach taken is at an introductory level and remains conceptual. Having stated this, the framework still contributes ideas to consider in relation to the evaluation of an organisation's readiness to engage with knowledge management, particularly the Communities of Practice and the extent to which an organisation engages in initiatives such as this to share, create and improve knowledge and learning.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 42	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	3	1	1
Process	5	5	3	1	1
Activities	5	5	3	1	1
Develop & Test	1	1	1	1	1

Zack MH (1999)**Purpose**

The purpose of the framework is made explicit and intended to configure organisational and technical resources and capabilities to gain advantage from codified knowledge. The framework has been developed from a brief review of literature. Although the purpose of this proposed framework is clearly stated, subsequent discussion is not clear or well reasoned. The authors initially present the content of the framework, offer descriptive examples which do not reflect the benefit of the framework per se and follow this by continuing discussion about managing knowledge processes in relation to organisational context and knowledge repositories. There is no theoretical underpinning and although empirical work is indicated, it remains ambiguous.

Knowledge Management Process

The knowledge management process is referred to within the scope of a knowledge management architecture, which has four elements:

1. Repository of explicit knowledge, which contains knowledge as an object, defined as structure and content, and within which knowledge units exist. Knowledge units are linked by the knowledge object and are labelled, indexed, stored, retrieved and manipulated.
2. Knowledge refinery is the process for creating and distributing knowledge contained in the repository and includes a five stage process:
 - Acquisition;
 - Refining;
 - Storage and retrieval;
 - Distribution and presentation.
3. Knowledge management roles are cross-organisational processes and include:
 - Educating the organisation;

- Knowledge mapping;
 - Integrating organisational and technical resources.
 -
4. Information technologies are concerned specifically with the flow of explicit knowledge:
- Capturing knowledge;
 - Defining, storing, categorising, indexing and linking knowledge;
 - Searching and subscribing to relevant content;
 - Presentation of content in a flexible, meaningful and applicable manner across various contexts of use.

The relationship between the overall process (architecture) and processes within are not explicitly drawn out in a clear and understandable way. The author then adds to this with another process referred to as integrative and interactive applications. Integrative applications relate to the sequential flow of explicit knowledge into and from the repository. Interactive applications focus on people and tacit knowledge. There is no reference to theory to underpin this approach and although reference is made to empirical work, this remains ambiguous.

Knowledge Management Activities

Having identified the process (es), the author does not explicitly refer to activities. For example the foregoing identifies processes within processes some of which could be defined as activities and have been addressed in the foregoing.

Development and Testing

The author uses literature in the development of this framework, however discussion and reasoning appears weak. There is no theoretical underpinning and no reference to methodology. The author states that research has been conducted in two case organisations cited, which provide examples of managing explicit knowledge. The

author, however, does not explicitly state that this research was undertaken in the development of the framework and the cases do not reflect use of the framework.

Conclusions

The author concludes by specifically referring to the case organisations stating that organisations that manage knowledge effectively understand strategic knowledge requirements and develop a knowledge strategy appropriate to the business strategy. Organisational and technical architecture is implemented and commitment to the knowledge cycle is evident. Little reference is made to the framework except to indicate that it provides a guide to managing knowledge.

Summary

Overall the purpose of the framework is explicitly stated, but discussion is disjointed and reasoning is weak. There is no theoretical underpinning and empirical work is referred to but remains ambiguous. The knowledge management process is referred to, both as the overall process and processes within the process, which have been considered here as activities. Development has been undertaken through literature, and there is no evidence of testing. This provides another alternative example to consider in relation the structure of a framework.

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 42	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	4	2	2	1	1
Process	5	3	2	1	2
Activities	3	2	2	1	1
Develop & Test	3	2	2	1	2

5.4 Discussion

To recap, the approach to this review has been structured carefully by establishing the criteria up front involving a three-stage process:

- the establishment of a set of key words to conduct the initial search from which over 3,000 papers were found. From these, 267 articles were identified as having potential relevance to this research, however, 107 of these focussed solely on technology and technical aspects of information, and were not, therefore, considered suitable;
- an initial review of knowledge management frameworks and a process of elimination using key words from which 35 papers were regarded as having frameworks that were worth serious assessment;
- a systematic review of the remaining and most appropriate frameworks with the help of an evaluation grid that has been developed as part of this work.

The two key objectives of the evaluation were to show that, firstly, there is no single existing framework that addresses KMR, highlighting gaps in concepts and practice. Secondly to identify useful elements and concepts that ought to be in the framework being developed. Objective one was achieved showing that a new framework for the evaluation of an organisation's potential to engage in knowledge management will contribute to knowledge and the shortfall is clearly demonstrated in Table 5.4.1

Table 5.4.1: Total and Average Scores of Frameworks

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Total Scores 1943/3500 (55.5/100)					
Purpose	159(4.54)	139(3.97)	118(3.37)	64(1.82)	64(1.82)
Process	139(3.97)	120(3.42)	108(3.08)	59(1.68)	68(1.94)
Activities	107(3.05)	91(2.6)	82(2.34)	56(1.6)	63(1.8)
Develop & Test	82(2.34)	74(2.11)	73(2.08)	53(1.51)	67(1.91)

Table 5.4.1 identifies overall and average scores for each cell of the evaluation grid. The total score of all frameworks is 1943 of a potential 3500. The figures in brackets represent average scores, and the overall average score per framework is 55.5 out of a possible 100. The highest scoring aspects of the frameworks relate to explicitness of purpose and knowledge management process. The lowest scores relate to theory and empirical work, development and testing. The difference in scores within cells are nominal, and to some extent reflect the close association between approaches and content of the frameworks reviewed. The basis for judgement in distinguishing between the frameworks has been derived from the discussion provided and is, in essence a qualitative decision according to the main focus of this research.

The overall results suggest that for managers wishing to introduce knowledge management into their organisations, there is little to offer that is soundly based and accessible. Papers tend to be over simplistic or too theoretical. Many fail to offer a reasonable set of coherent activities in a connected form that could be described as a holistic framework. Many frameworks tend to focus on one particular aspect of

knowledge management such as intellectual capital or knowledge sharing. It is difficult to find a holistic framework that managers could use to evaluate their own organisation's potential to feasibly consider or introduce knowledge management to their organisations.

Objective two, the identification of useful elements and concepts that ought to be in the proposed framework being developed has been achieved by identifying elements of best practice within the reviewed frameworks, and as such table 5.4.2 shows a further breakdown of scores, from which the highest scoring aspects can be drawn out.

Table 5.4.2: Individual Scores per Framework

	<i>20 = lowest score 100 = highest score</i>	Purpose	Process	Activities	Develop & Test		Theory	Empirical
Abou-Zeid ES (2002)	66	17	17	17	15		4	6
Achterbergh J, Vriens D (2002)	82	23	20	22	17		17	12
Arora R (2002)	39	15	8	11	5		4	4
Balasubramanian P, Kumar N, Bhatt GD (2002)	50	13	14	13	10		4	11
	41	17	11	8	5		4	4
Binny D (2001)	39	17	12	5	5		4	7
Bolloju N, Khalifa M, Turban E	38	14	10	5	9		10	4
Bower WD, Heminger AR	45	15	13	5	12		4	10
Carneiro A (2001).	51	17	12	5	8		4	4
Connell C, Klein JH, Loebbecke C, Powell P (2001)	48	18	18	10	5		7	4

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De Gooijer J (200)	48	19	12	7	10	8	10
Duru Ahanotu N (1998)	50	16	13	16	5	11	4
Escriba-Esteve A, Urria-Urbieta JA (2002)	60	20	20	5	15	13	4
Firestone JM (1999)	60	7	14	14	5	4	4
Gao F, Li M, Nakamori Y (2002)	43	13	13	12	5	10	4
Goh SC (2002)	37	16	11	5	5	6	4
Hatten KJ, Rosenthal SR	52	14	15	15	8	4	4
Hlupic V, Pouloudi A, Rzevski G	46	18	18	5	5	6	4
Holsapple CW, Joshi KD (2002)	92	21	22	24	25	12	20
Hylton A (2002)	33	11	11	6	5	4	6
Joshi KD (2001)	76	23	15	23	15	16	11
Kamara JM, Chimay JA,	54	18	14	12	10	4	10
Knight T, Howes T	75	20	21	15	19	5	20
Kwan M, Balasubramanian	79	21	21	16	21	4	20
Kwang KL, Pervaiz KA, Mohamed Z	41	11	11	14	5	4	4
Lee JH, Kim YG (2001)	100	25	25	25	25	25	25
McAdam R, Reid R (2001)	47	15	12	5	15	4	4
Merali Y (2000).	47	13	15	5	14	7	9
Mullich J (2001)	20	5	5	5	5	4	4
Newman B, Conrad KW (2000)	44	15	9	15	5	4	4
Pérez Pérez M, Sánchez AM,	56	16	19	12	8	4	9

Pervaiz K, Kwang KL, Mohamed Z	34	10	9	10	5	4	4
Robertson S (2002)	30	8	6	8	8	4	7
Snowden D (@ 1998)	50	15	15	15	5	4	4
Zack MH (1999)	42	10	13	9	10	4	6

The highest scoring frameworks provide specific areas of interest, for example, Achterbergh J, Vriens D (2002) use Beer's (1979) Viable System Model (VSM) to support the diagnosis, design and implementation of knowledge processes, to establish what kind of knowledge an organisation needs to remain viable and how to manage knowledge to achieve this. This is a logical systems approach to knowledge management and reflects the complexity of organising and defining activities to establish a system of managing knowledge. The 5 functions of the VSM and associated activities demonstrate that a systems approach provides a robust underpinning to knowledge management. Holsapple and Joshi (2002) offer a sound methodology based on the Delphi process which provides validation and adds to the credibility of their framework, which relates to the process and activities that should be considered to implement knowledge flow and manipulation. Knight and Howes (2003) introduce a practical framework comprising a set of tools to structure thinking and implementation of knowledge management in an organisation, but contains no reference to theory. Kwan and Balasubramanian (2002) provide a robust system of knowledge management, paying particular attention to the technical interface. Lee and Kim (2001) use a combination of resource based theory and life cycle theory to underpin knowledge management and provide a well reasoned, empirically tested framework.

5.5 Conclusions

Overall, the majority of papers present aspirational frameworks for implementing knowledge management, with sparse theoretical and empirical underpinning. Few consider the readiness and ability of organisations to engage or make assumptions about

organisation's ability and willingness, giving the impression that by using the framework, an organisation will become competent in knowledge management. As a consequence the frameworks do not adequately consider all aspects to effectively implement knowledge management in a sustainable way. As has been established in this research, knowledge management is still an emerging field and until recently the main focus of development has been in the technical domain, retaining the emphasis on speedier information exchange, data storage and explicit knowledge sharing. Tacit knowledge sharing is now gaining greater recognition as practitioners are beginning to experience the limitations of technology and the driving forces to engage with knowledge management relate to people, management and the culture of the organisation.

The foregoing has been demonstrated through empirical work conducted in the University of Luton (chapter 3) and subsequent discussion throughout this research thus far. It has become clear from this chapter that there is no unified approach to knowledge management, but the author is not advocating that there should be one prescriptive approach for the management of knowledge in different organisations. The challenge is to establish a generic framework with an appropriate theoretical underpinning that is understandable and provides guidance for managers in a university to consider successful engagement, prior to implementation and ultimately a sustainable approach.

Such a framework would be strengthened if it were based both in theory and practice and considered the management and human capability as a significant element in the knowledge management process. The kind of framework proposed here should be at a strategic level if it is to work properly, therefore strategy is one area that could offer theoretical underpinning. Systems literature, however, has a lot of strength and potential to offer strategic knowledge management a theoretical basis and critical systems thinking links to learning and knowledge, providing a means to consider whether the right kinds of issues are being addressed. For example, are technological issues and hard processes being debated when the real area of concern is highly cultural and human oriented.

Drawing on Soft Systems Methodology (see appendix 4) this research has been undertaken within an action research paradigm, with the research design evolving during

the process, therefore taking into consideration context and sensitivity to emerging issues. SSM has a learning cycle and knowledge management must be concerned with learning. Furthermore, much of the knowledge management literature as demonstrated here is technically based, whereas knowledge resides with people and evaluating an organisation's Knowledge Management Readiness (KMR) would involve action research.

The proposed framework offers a holistic, critical, high-level strategic approach, in addition to more detailed operational guidance as to how to consider an organisation's readiness to engage in knowledge management. This is in contrast to the reviewed frameworks, which tend to focus on one aspect of knowledge management, for example knowledge sharing, or hard technical aspects. It is also different from other frameworks because it is not prescriptive, but is intended to help empower an organisation to undertake critical self evaluation at both the broad organisational level, group level, and individual level. It is proposed that these key differences from previously published work represent new contributions to knowledge. This chapter discusses the initial framework, the refinement of the framework based on external critique and reasoning, a revised framework and its justification, and within that revised framework a process to facilitate critical self evaluation by an organisation. Chapter nine will provide a discussion of the application of this framework to a case organisation.

6.2 A Framework for Knowledge Management: Version One

Drawing together the learning and information gathered to this point, this section focuses on the actual incorporation of the conceptual framework. The key areas for consideration that have emerged from the research in the foregoing have been clustered and structured in Domains in figure 6.2.1 and within each area identified, a further cascading of Elements are illustrated in figure 6.2.2. The overall model in figure 6.2.1 does not fully reflect the dynamic interaction that knowledge management is within an organisation; it does however offer some indication at this stage of a complex system, with the main emphasis on the human dimension. Section 6.3 will discuss the eventual revision of the framework, therefore addressing objectives 6 and 7, relating to evaluation of the conceptual framework and revision of the framework in the light of the evaluation. This is followed by section 6.4 which will discuss the final Elements of the framework and their justification prior to application and testing in a university.

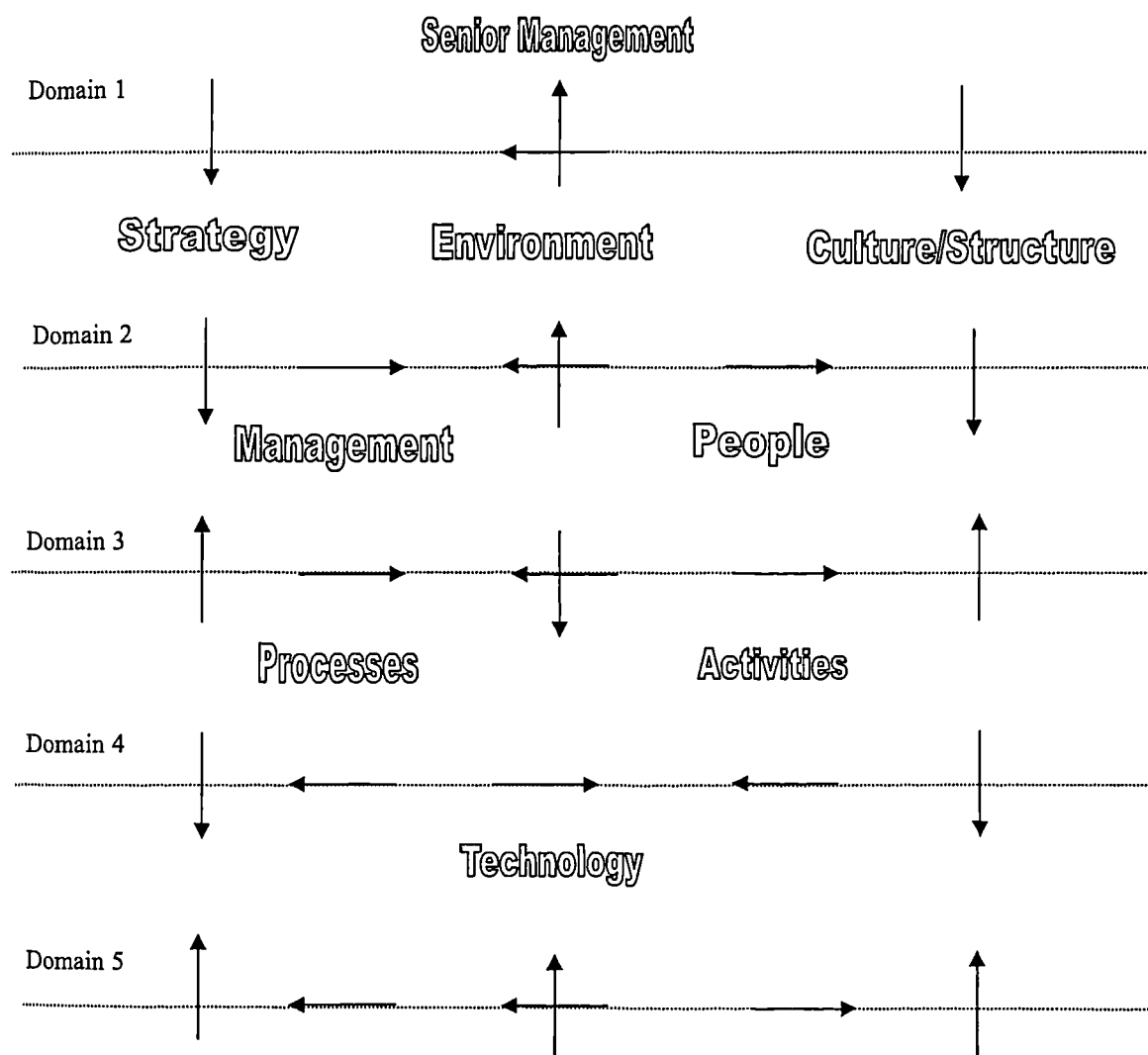


Figure 6.2.1: Framework for Knowledge Management Version One (Domains)

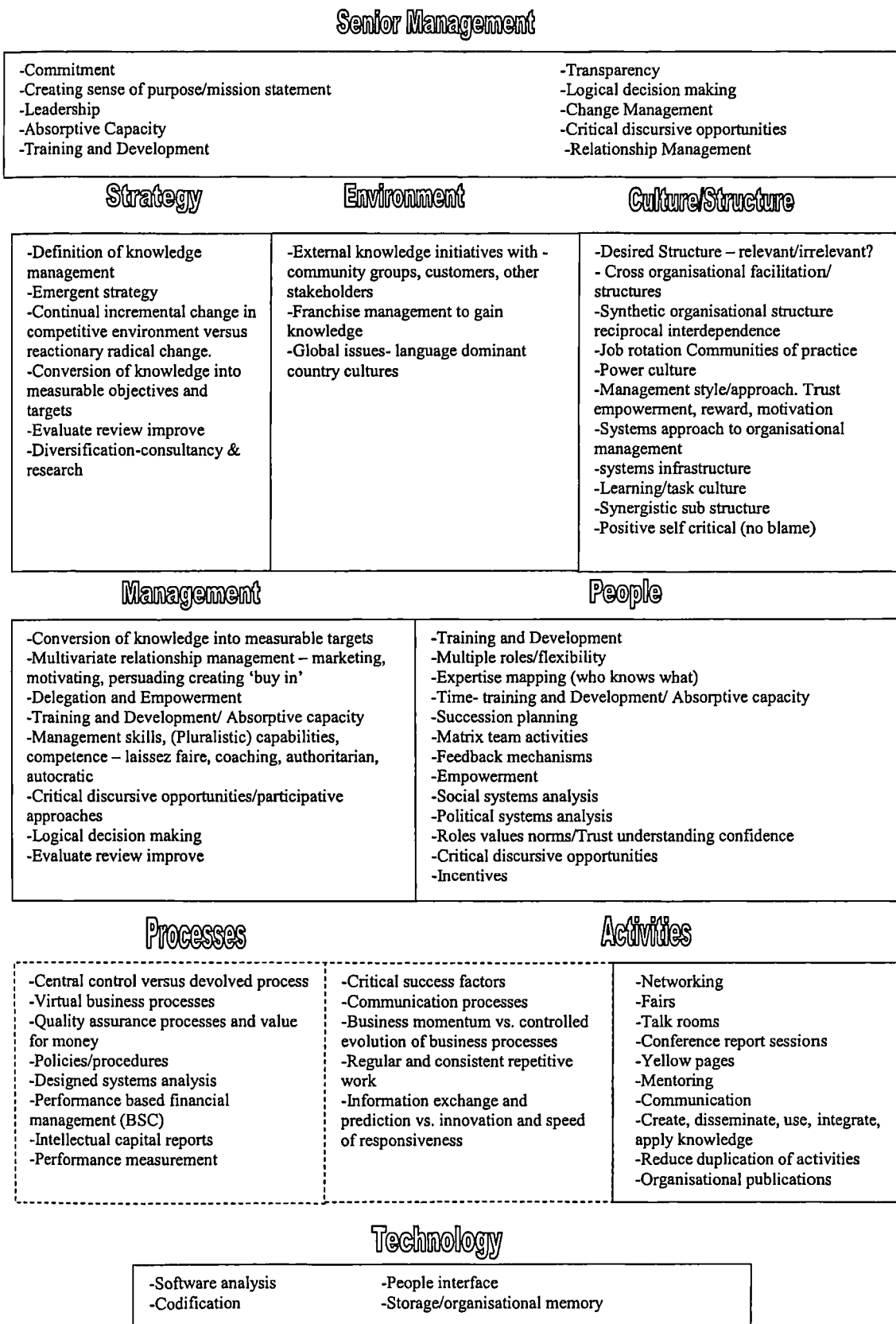


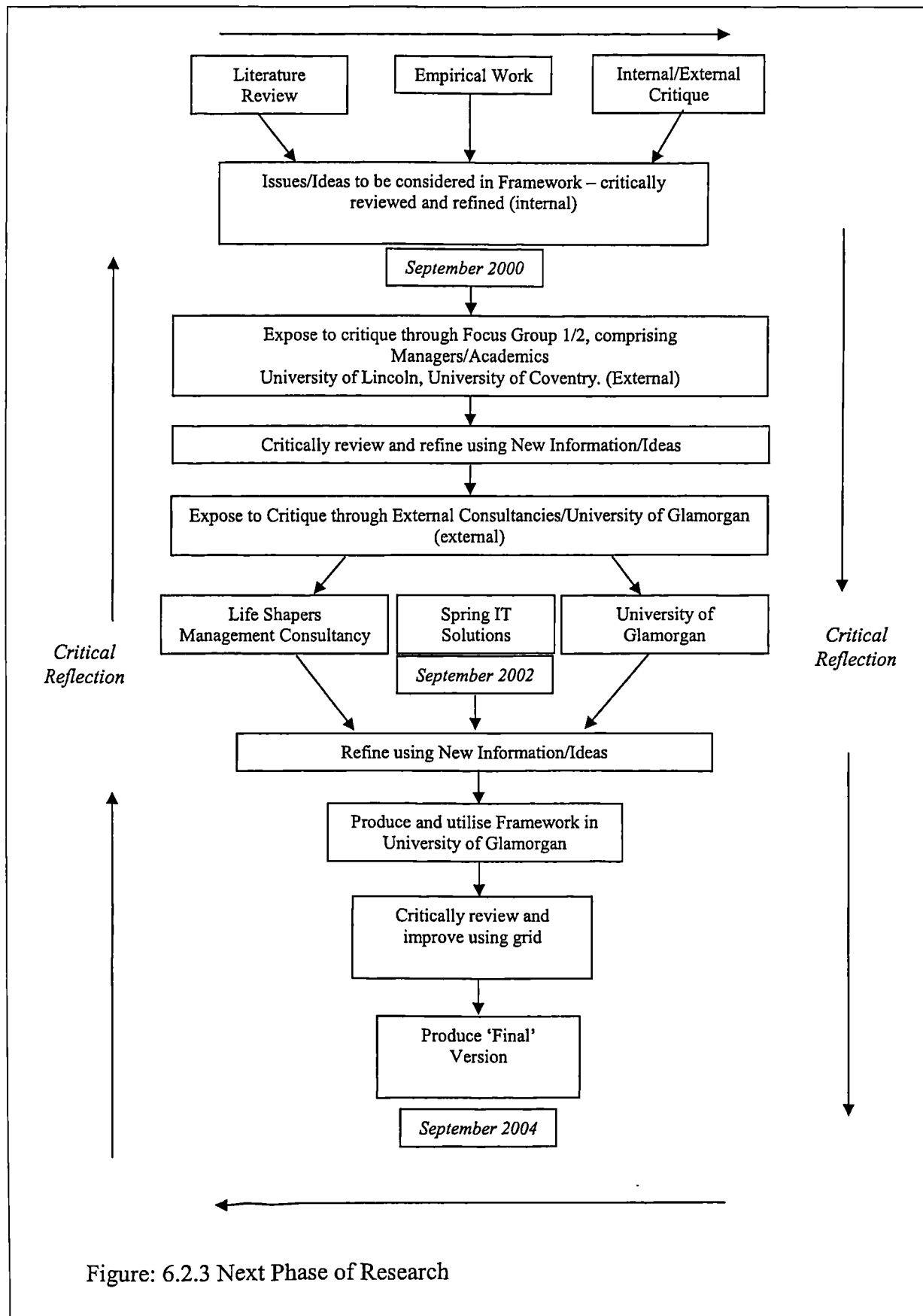
Figure 6.2.2 Elements within the Framework Version one

Looking first at figure 6.2.1, this has been organised into Domains within which figure 6.2.2 identifies Elements supporting each Domain. Domain one is the first step and represents a requirement for commitment from senior management who have the power and position to direct the organisation, whilst bearing in mind the strategic direction, environment and culture, and structure in Domain two. Domain three refers to operational management in relation to attitude, style, competence and the people within the organisation who have the ability to implement knowledge management or obstruct it. Domain four includes the overall organisational business processes, which reflect the organisational infrastructure and activities which are operational. Domain five, which contains technology, is the supporting tool to facilitate the organisational information system and communication. Apart from selecting the appropriate software for sharing information, it is the interface between IT and people that will render chosen software effective or ineffective, therefore the emphasis remains on people.

The rationale for focussing on people comes from the view that knowledge resides with individuals who comprise the organisation. Referring back to the reasoning and discussion in appendix 3 and chapter 4, whilst recognising the impact of structure or infrastructure, ultimately an organisation is a system which brings large or smaller groups of people together to achieve a common goal. This discussion highlights interconnectivity, and the need for holistic consideration and relationships between the different parts of an organisation, not forgetting the potential outcomes. Further, literature shows that the concept of knowledge management continues to develop from a predominantly technological and process oriented system, to a human oriented system with greater recognition of the importance of human resource management, human assets, and intellectual capital.

The arrows in the framework highlight the horizontal and vertical interaction of each Domain, all of which encompass the whole. The framework is not generally intended to be sequential, but for illustrative convenience has been presented in this way.

From the foregoing chapters, figures 6.2.1 and 6.2.2 have undergone changes and the rationale for this will be discussed in section 6.3. The initial breakdown of Elements that have been organised into the Domains of the overall conceptual framework have emerged from empirical research and literature review and include all aspects at this first introductory stage from which further refinement is undertaken through critical reflection and further empirical work. The process of refinement is undertaken by reviewing the structure of the framework's Domains and Elements through critical reflection and reasoning, and empirical work based on feedback from external expertise to justify the inclusion, relocation or exclusion of Domains and Elements from the framework. The framework is then applied and tested. Following this empirical work and refinement, the framework will be considered against the same grid for critical review as was undertaken in chapter 6 to ensure consistency of approach. This phase of research is illustrated in the following flowchart in figure 6.2.3:



6.3 Refinement of the Framework

This section critically discusses the Domains and Elements highlighting the changes made and how those changes have been arrived at. In the first instance changes that involve exclusion or relocation are presented, followed by a summary of the justification of the remaining Domains and Elements. The remaining Domains and Elements are presented in table 6.4.3. This is an iterative process undertaken through internal critical reflection and exposure to external critique and feedback received.

External expertise is derived from interviews and focus groups including technical consultancy, to ensure a view from a technical perspective given the emphasis on people (appendix 8) and focus groups held at Lincoln University (appendix 7), Coventry University (appendix 10) and the South Wales Learning Community (appendix 9), all of which either confirmed the content or resulted in changes to the framework. The changes and issues are discussed as follows:

- i. *The title Senior Management has been changed to Management and Management referred to in Domain three has been relocated to Domain one.*

Management and the Elements in Domain three have been relocated to Domain one because the issues and questions to be considered are similar whether at a senior or operational management level. By keeping them separate results in duplication and unnecessary complexity in the presentation of the framework. Feedback received from the South Wales Learning Community (SWLC) focus group (appendix 9) support this view. It is worth noting, however, that if the organisation undergoing assessment needs to distinguish between senior management and management or any other cohort of staff, this can be undertaken by identifying positions/roles during the actual assessment and subsequent analysis.

Elements within management that have been removed are multivariate relationship management as this is contained within the scope of leadership. Pluralistic capability is

contained within the scope of management style, and conversion of knowledge into measurable targets has been relocated to strategy as part of the strategic process.

ii. *Creating a sense of purpose merged with commitment.*

This has been undertaken based on feedback gathered through a focus group held at Lincoln University (appendix 7). Participants proposed that clarity, purpose and commitment is essential to achieve action and all aspects should be considered together. Literature confirms that management need to build a shared vision for others to commit to as well as committing adequate resources to ensure progress and increase the chances of success with regard to any new initiative.

iii. *Communication has been relocated from Domain four to be included in Management in Domain one.*

Empirical work undertaken in case study one (University of Luton), identifies communication as being an issue in relation to management in particular, and as an Element that emanates from management throughout the organisation, affecting learning and cross organisational working practices. It is recognised, however, that communication is key to all aspects of organisational life and feedback from the Lincoln University Focus group (appendix 7) propose the concept of designing conversation for action and establishing sharing structures that enable communication, which the group felt usually derives from management action and commitment. The focus group with the South Wales Learning Community (appendix 9) identifies the need to avoid silos and as such considers horizontal and vertical communication and the need for a two way process, which they place in the context of management.

- iv. *Transparency – removed*
- v. *Risk analysis - added*

Transparency has been removed because it should be considered in the context of communication and the extent to which information communicated can be transparent. Levels of risk in relation to what is communicated and when, should also be considered and in this sense transparency is an explicit consideration in the context of risk assessment and remains a general consideration for an organisation irrespective. Risk analysis has been added as an extension or supporting tool to the framework, which can be initiated following any decision to engage with knowledge management and how knowledge management might be rolled out in the organisation.

- vi. *Emergent strategy - removed*
- vii. *Continual incremental change in competitive environment versus reactionary radical change – removed.*

In both cases, whether the strategy is emergent or radical may change according to circumstances at a given time in the organisation. Neither term offers any real measure in relation to assessing an organisation's readiness to engage with the concept of knowledge management, but reflects more on the context and circumstances in which knowledge management is driven. For example, if the competitive environment is fast moving, the need for controlled, fast responsive knowledge exchange will be higher than if the environment is stable.

- viii. *Franchise management to gain knowledge – relocated.*

Franchise management has been relocated to external knowledge initiatives because the external relationship with franchises is synergistic with other types of external interactions and relates to knowledge transfer, similarly with *diversification*.

ix. *Diversification – consultancy, research and development- relocated*

Diversification – consultancy, research and development has been moved from the strategy Domain to external environment Domain because such activities represent the external business interface.

x. *Internal environment – added.*

Internal environment is added because the physical opportunity to share tacit as well as explicit knowledge within the organisation is a key factor and the right type of environment to facilitate this is advantageous. For example, an organisation that does not have the physical opportunity to exchange ideas, concepts, experience and knowledge in an informal way may not be as effective as an organisation that does. It could be argued that virtual opportunities can facilitate this, but technology does not create the enthusiasm and exchange that an interpersonal dialectic process can. It is still important however to give due consideration to virtual opportunities for fast and responsive exchange of information, therefore *technology* is considered in the framework as another aspect of this physical facilitative opportunity and moved from Domain five, to be included in internal environment.

xi. *Culture and structure relocated to a cross Domain position.*

Literature and empirical research gathered during a focus group at Coventry University (appendix 10) confirm that since culture and structure is derived from all other aspects of the organisation such as management, people and process, it should not be set within one Domain of the framework, but cuts across all Domains and Elements. Specific Elements that were identified within culture have been relocated to other Domains: Job rotation and communities of practice have been moved to people in Domain three. Management style/approach has been moved to Management in Domain one.

- xii. *Empowerment relocated from people in Domain three to management in Domain one.*

Empowerment has been relocated because it is commonly regarded as that which can be given by managers to the workforce and is dealt with as such under management.

- xiii. *Social Systems Analysis removed*

This Element has been removed because it reflects more accurately how the framework could be used and the ethos of assessment, rather than a specific Element that should be within a framework. Appendix 4 explores Soft Systems Methodology (SSM) within which a model of Social Systems Analysis for use in SSM is discussed. The model shows three separate Elements which are roles, norms and values. Roles relate to the position in the organisation, relationships with others, job content and external links. It is recommended that the user of SSM should conduct a social systems analysis after every interview, conversation or review of related documentation. Equally, when using the framework to evaluate an organisation's readiness a similar approach could be taken.

- xiv. *Political Systems Analysis removed*

As with 12 above, Political Systems Analysis has been removed because it is more relevant to the ethos and use of the framework than a specific Element. For example, if the concept of knowledge management involves innovation and creativity to think and produce beyond individual experiences, then social, cultural and political domination should be key considerations. The Political System Analysis considers how power is obtained and disposed, and how that power is utilised in relationships between different interest groups. The political dimension is unavoidable in any human situation as individual perspectives, agendas, interests and positions of power will influence every aspect of a social type investigation and balance between these Elements is important. When referring to political analysis, SSM is particularly concerned with power; and

politics is power in the context of managing relations between variable interests. This exposes the overall potential sensitivity of knowledge management in an organisation.

xv. Designed Systems Analysis removed

Designed Systems Analysis has been removed because it is more important to the generic theoretical underpinning rather than the content of the framework. Empirical work and the literature review demonstrates that designed systems are a key activity in organisational life, for example designed structures, job design, network designs, systems designs and process design, or in this case a knowledge management framework. Checkland (1993) proposes that designed systems can be physical or abstract and describes the key factors which comprise it, their current condition, relationship with external factors which affect a system and the condition of those external factors, and as such this framework, in evaluating the organisation's readiness to engage in knowledge management is exploring these areas through the various Domains and Elements. In addition, a system is regarded as an entity that receives inputs i.e. responses about the organisation's current state of knowledge management, and produces outputs i.e. a measurement of the current state which is intended to offer guidance or expose Domains and Elements that may require intervention and future action to improve.

Designed systems are relevant to physical and human activity systems (explicit and tacit Domains of knowledge management). The relationship between the two is that human activity systems are less tangible, yet clearly observable. The human activity system is a combination of activities that are linked together in a coherent and ordered way, but can not be considered in isolation as they are closely related or associated with designed abstract systems i.e. the dynamic nature of knowledge management in the organisation. The structure, processes, procedures, etc are designed abstract systems which represent the order and conscious product of the human mind and can be flexible according to the speed of decision making and communication in the organisation (i.e. how the organisation generally operates within the context of knowledge management).

Designed physical systems are easily identified solid systems such as structure within which change may be less easy to achieve or radically alter in any significant way. Human activities direct abstract and physical systems and are undertaken within and around designed systems abstract and physical. The significant difference in the two approaches is that designed systems may have limited outcomes, whereas in human activity systems freedom of choice results in unpredicted outcomes.

The 'owner' or analyst using a comprehensive knowledge management framework should consider physical, abstract and human activity systems, which provide different perspectives in a multidisciplinary approach. This approach to the implementation of the framework strengthens the theoretical underpinning derived from Checkland's Soft Systems Methodology (1981). For example, relating human activity and designed systems to knowledge management, in the case of human activity, employees should know of their individual involvement as important to the purpose of a knowledge management System, and as with any organisation will define the mission or purpose, contextualising it according to their roles. Designed systems are made with fitness for purpose in mind so to design a system within which the concept of knowledge management can exist means that the purpose must be clear, therefore an appropriate definition of knowledge management for higher education may be necessary. A strategic knowledge management system that is fit to achieve the purpose and one which recognises the extent of flexibility and influencing variables, may be an overly complex and extensive model if it is to address all aspects of the organisation. However, by reducing the complexity to a holistic position, a generic core framework appropriate to evaluate the entire organisation may be achieved, and as with the ethos of Soft Systems Methodology it may be adapted and used in different ways in different circumstances.

Drawing on empirical work and the literature review, it is clear that managers design both the human activity and abstract systems in the organisation, however, the extent to which one impacts on the other is sometimes lost. This is apparent in the University of Luton case study (chapter 3) when considering the inconsistencies in policy and procedures. Learning from this, it is important to consider all aspects of required change that should

be considered when evaluating an organisation's readiness to engage with knowledge management, and re-emphasises the importance of a holistic approach to the concept of knowledge management in an organisation. However, as indicated, for a full and comprehensive consideration, it remains with the analyst to undertake this depth of analysis.

xvi. SWOT analysis added

Feedback from the University of Lincoln (appendix 7) identifies that a SWOT analysis (assessment of strengths, weaknesses, opportunities and threats) would be beneficial in the context of knowledge management to establish the organisation's current position, followed by a risk analysis in relation to the type and nature of knowledge sharing that may be proposed. If applied in isolation, the SWOT analysis is unlikely to offer guidance that is appreciative of the complexity of knowledge management, but does provide an opportunity to summarise the outcome of an organisation's evaluation after which a risk analysis will help to establish what can feasibly be achieved.

xvii. Knowledge Bank added to Domain four

Consideration should be given to the establishment of a knowledge bank, based on the principle of filtering, depositing and withdrawing knowledge. This has been included as an Element in Domain four under activities, because activities are the initiatives and actions that may be undertaken to support knowledge management and a knowledge bank is synergistic with other Elements in this Domain.

xviii. Activities changed to Communication Activities in Domain four

Activities have been changed to communication activities because all Elements within this Domain relate specifically to the types of activities that facilitate organisational knowledge sharing, learning and creativity. This is different from communication

identified in the management Domain because that reference to communication is at a strategic level and is intended to explore the communication culture.

xix. Culture relocated

Further feedback from the University of Lincoln (appendix 7) identifies that culture and underpinning systems are key to the success of knowledge management, therefore an assessment of culture needs to ascertain whether it is supportive of the concept of knowledge management or not. Rather than identifying culture as a separate issue, it is expected that a key result in applying the framework will offer an indication of the type of dominant culture emanating from the organisation. Culture, therefore, has been moved to a generic position in the framework so that it remains a general consideration rather than a specific Domain.

xx. Asking the right questions for evaluation - added

In terms of evaluating the organisation, feedback from the University of Lincoln (appendix 7) placed significant emphasis on knowing what and knowing how. For example, knowing what information in relation to marketing such as customer information, international markets, competitors, sub markets. Knowing how to take action which enables the receiver to carry out specific action to the benefit of the organisation, rather than having information and knowledge for the sake of it. Placing this view in the context of organisational evaluation of readiness asking the right questions is an important requirement in identifying what currently happens and what ought to happen for an organisation. SSM proposes that desirable and feasible changes are considered through debate with potential changes or improvements compared to the real world, for example what actually happened and what could have happened. This research explored and developed a framework in a neutral, balanced and critical way in a multi-methodological manner, drawing from Soft Systems Methodology and enhancing that by applying a critical element during the course of development of the framework.

Drawing on Skyrme and Amidon's (1997) six questions of investigation provides a structured approach to inquire about knowledge management:

Know How – This relates to how well the work force knows to get things done, which can be demonstrated through organisational procedures, manuals and other written forms, but also a large proportion of information is gathered through experience and tacit knowledge.

Know Who – This relates to networking and knowing who to ask about a specific subject area or problem situation, either internally or externally.

Know Why – This is the understanding and contextualisation of knowledge in relation to purpose, mission, vision, strategic direction of the organisation at one level, and simple procedure at another. Knowing why a particular action is undertaken in a given circumstance improves understanding of roles and contribution to the organisation and to some extent assists in improving the quality of the experience, therefore performance.

Know That – This relates to instinct or intuition and includes the common language of professionals and communities in the same arena, for example, doctors, IT experts, scientists. It is the sense of knowing that an action undertaken is the right course of action. Such knowledge is built up through formal education, training and experience.

Know When – This relates to timing and picking the right moment to take action, for example, whether it is the right time to promote a new product on the market or diversify.

Know Where – This relates to the ability of the workforce to locate the information they need either through the use of IT or paper based functions.

The framework has, therefore, been extended to incorporate these questions as part of the evaluation of the current situation and to initiate discussion within the organisation to

explore the stage of readiness that the organisation may be at. This is illustrated in Table 6.3.1 and discussed and reviewed in section 6.5.

Table 6.3.1 Evaluation Matrix

	Know How	Know Who	Know Why	Know That	Know When	Know Where
Definition of knowledge management	Definition of knowledge management for the organisation. This should be undertaken in partnership with management and key staff to ensure buy in and understanding in the context of the organisational purpose, strategic direction and values.					
Management	How well does management know how to get things done either through formal procedures or through the experience and tacit knowledge of others as well as selves	Does management know who to network with internally and externally to address a specific problem, issue, idea etc	Does management have a position that can contextualise the knowledge to apply to purpose, mission, vision strategic direction	Does management have the appropriate education, training, experience to manage knowledge in the organisation and use the right type of language to express the organisational direction	Does management recognise and take action at the right time to maximise on opportunities	Does management have the ability to locate the information they need to inform decisions.
Strategy	Is the strategy explicitly presented through formal procedures, manuals or other written forms	Does the strategy clearly guide the organisation in a cross cutting and participative way	Is the strategy appropriately contextualised with direction and operational procedure presented in an understandable format	Is the language used in the strategy understandable to the broader organisation	Does the strategy explicitly identify key dates to undertake action in the context of the competitive environment	Is the strategy made available at an easy accessible location for the broader workforce to engage and contribute to it?
Internal Environment	Is the physical internal environment conducive to supporting the workforce in taking action to share information, experience and tacit knowledge Is technology appropriately designed in an easily accessible way	Does the internal environment provide space for networking and informal interaction to increase 'know who' opportunities. Does the ICT identify individuals who will make access and the interface with IT	Does the internal environment provide opportunities to engender understanding about roles, contributions and quality of working experience. Does the Technology facilitate the understanding of roles and contribution to the organisation	Is the common language of the organisation displayed in communal areas to engender a culture, instinct about the overall ethos? Is the language used about and within the technological framework understandable and user friendly to the broader workforce	N/A	Is there a physical space where the broader workforce can easily locate information needed either through IT or paper based functions? Is the technology constructed with the user in mind facilitating easy access of information within
						<i>Continued</i>

External Environment	How well do key players in the organisation know the local, regional and global environment to take action to the benefit of the organisation	Are external contacts and networks coordinated to avoid duplication of effort and ensure an efficient approach	Is the knowledge gathered externally understood and contextualised in relation the organisation's purpose and strategic direction, therefore explaining why a particular relevant action may be taken?	Has the organisation benchmarked internal education, training and experience against the external environment to ensure intellectual capability, instinct and language provides competitive advantage	Does the organisation know when to take action to improve competitive position relative to the external environment	Does the organisation know where to locate external information that will advantage the competitive position?
People	How well does the general workforce know how to get things done either through procedures, manuals experience and tacit knowledge	Does the workforce know who does what according to specific subject areas	Does the workforce understand their role and contribution to the organisational strategy and vision and why particular action is taken	Does the workforce understand the language used by the organisation? Is their education, experience and training at an appropriate level for their role	Does the workforce know the right time to undertake action	Does the workforce know where to locate information needed though the use of IT or paper based functions
Processes	Are the processes made explicit in written form and to what extent do these have to be translated in a discretionary way	Have individuals been identified who are responsible for various processes	Do processes include any explanation of roles and contributions to the specific areas	Is the language used in process manuals presented with clarity	Do processes identify timing for actions	Are process manuals easily accessible either through IT or paper based functions
Activities	How well does the workforce undertake activities to achieve action	Do activities identify individuals responsible for action	Are activities relevant to the organisational purpose, strategy, direction	Is the activity the right course of action and effective for the organisation	Are activities undertaken in a timely manner	Are activities easily accessible to staff who want or need to participate

xxi. *Structure – relocated (see also xi and xix)*

Discussion and reasoning in chapter five suggests that any kind of structure can form an organisation, but if the culture is such that cross organisational sharing and learning is inhibited, the concept of knowledge management is less likely to be successful. Management style and communication are essential to ensure success in knowledge sharing and cross organisational working. Furthermore, it would appear that traditional structures are diminishing at a time of increasing technology and virtual working highlighting tensions between the need for centralised technology and standardisation, and a culture to facilitate a more human relations approach which engenders devolved responsibility, opportunity, knowledge creation, sharing and utilisation. It is considered, from this discussion, that the attitude of management and culture emanating from management is more important than structure, though structure should not be disregarded.

Structure and culture was explored during the focus group conducted at Coventry University (Appendix 10). The argument presented was that culture should be a generic component of the framework which emanates from every aspect within the overall framework. It should not be viewed as contained within one Domain. Discussion continued about the form of structure and the recognition that management in an organisation set the structure, ambiance and culture; therefore it is the influence of management that has a significant impact on the success or failure of a broad organisational concept such as knowledge management. The South Wales Learning Community (appendix 9) paid significant attention to this issue discussing the influence of management over structure and culture, pointing out that the structure may remain the same, but how an organisation functions will change according to the management style/approach.

- xxii. *Critical reflection in the overall process of evaluation has been explicitly incorporated.*

Critical reflection can be undertaken at a group, individual, peer, or subordinate level. The concept of critical reflection in the assessment process provides the opportunity for different perspectives to be fully considered and offers a balanced approach to the potential results. This is illustrated in the refined framework in figure 6.4.1 by arrows showing a cyclical process and is discussed further in 6.4.

6.4 The Revised Framework and its Justification

All changes identified in the foregoing have been incorporated into a revised framework illustrated in figures 6.4.1 (Revised Framework, Version Two) and 6.4.2 (Elements within Domains, Version Two) and are summarised in table 6.4.1. This is followed by table 6.4.2, which summarises the justification for including the remaining Domains and Elements:

Table 6.4.1: Summary of changes made to framework

<i>Definition of knowledge management added.</i>
<i>The title Senior Management has been changed to Management and Management referred to in Domain three has been relocated to Domain one.</i>
<i>Creating a sense of purpose merged with commitment.</i>
<i>Communication has been relocated from Domain four to be included in Management in Domain one.</i>
<i>Transparency – removed.</i>
<i>Risk Analysis – added.</i>
<i>Emergent strategy – removed.</i>
<i>Continual incremental change in competitive environment versus reactionary radical</i>

<i>change – removed.</i>
<i>Franchise management to gain knowledge – relocated.</i>
<i>Diversification, consultancy, research and development – relocated.</i>
<i>Internal environment – added.</i>
<i>Culture and structure relocated to a cross Domain position.</i>
<i>Empowerment relocated from people in Domain three to management in Domain one</i>
<i>Social Systems Analysis removed.</i>
<i>Political Systems Analysis removed.</i>
<i>Designed systems analysis removed.</i>
<i>SWOT analysis added.</i>
<i>Knowledge Bank added to Domain four.</i>
<i>Activities changed to Communication Activities in Domain four.</i>
<i>Culture – relocated.</i>
<i>Asking the right questions for evaluation-added.</i>
<i>Structure – relocated.</i>
<i>Critical reflection in the overall process of evaluation has been explicitly incorporated.</i>

Table 6.4.2: Justification for Remaining Elements in Framework

<i>Domain 1</i>
<p>ORGANISATIONAL WORKING DEFINITION OF KNOWLEDGE MANAGEMENT</p> <p>Summary of justification for Definition of knowledge management</p> <p>(Sections: 1.1, 4.7, A4.3, 5.2, 5.5 appendix 9)</p> <p>This section discusses the view that has emerged during this research which demonstrates that knowledge management has many definitions according to the perspective and discipline of the individual or organisation that engages with the concept. Each discipline approaches knowledge management with a different perception, for example, information systems focus heavily on technology, human resources take an individual and organisational learning approach, and intellectual assets focus on the explicit capture and registration of knowledge. Specific organisation type definitions of knowledge management have been offered by Murray and Myers (1997), MacDonald (1999), KPMG (1999) Nonaka and Takeuchi (1995).</p> <p>Evidence suggests, that there is no single unifying definition or approach but principles and content that encompass the whole and the author's definition involves people, processes, activities, technology and the broader environment that enable the identification, creation, communication or sharing, and use of organisational and individual knowledge for competitive advantage.</p> <p>With this in mind, rather than taking a prescriptive approach, each organisation would be expected to come to its own view as to what it means by knowledge management. Although the author has included a view emerging from the research this is for example purposes only. It is not intended to prescribe how any particular organisation should view knowledge management. However, if an organisation were to view knowledge management in a radically different way from that presented here, the value of the use of the framework would have to be questioned.</p>

It could be construed that the management of knowledge already occurs inherently to a greater or lesser extent in the general business of most organisations, but the actual concept and ethos of knowledge management and explicit awareness of what it entails may not be fully recognised. An appropriate organisational definition, therefore, will help to create a focus and achieve ownership and commitment.

Given that definitions of knowledge management will differ according to the type of organisation, as well as disciplinary base of an individual. It seems appropriate to ensure a participatory approach in the establishment of a generic and understandable definition relevant to the direction of the organisation. This would need to be established in the first instance to clarify the vision of knowledge management that the organisation would be assessed against and without a realistic and feasible vision, committed to by management, the organisation will not be able to create 'buy in' from the workforce to implement.

Drawing on literature and theory and applying reasoned discussion, Hlupic et al (2002) assert that participants within a knowledge management system have their own conceptual structures and definitions of the world which are carried out through social constructs from which rules are developed through social interaction. This emphasises the importance of presenting a definition to the broader workforce to focus the direction. Kamara et al (2002) propose defining the knowledge management problem through the use of a Problem Definition Template (PDT). McAdam & Renee (2001) take a socially constructed approach because of the breadth of definition of knowledge and the intrinsic link with the social and learning processes in organisations. Considering Ulrich's (1983) perspective, decisions have to be made to establish a relevant definition, however this is subjective and may therefore change as practical learning and evidence emerge or perspectives and various definitions show synergy which could lead to an alternative definition.

In the context of systems thinking, designed systems are made with fitness for purpose in

mind so to design a system within which the concept of knowledge management can exist will require the purpose and mission to be clear. At the outset, the concept of knowledge management for an organisation may appear chaotic, but by taking a traditional analytical reductionist approach chaos can be simplified and complexity separated to engage participants to come to an understanding. But in this process of evaluating an organisations readiness to engage with knowledge management it may be inadequate to progress without recognition of the inseparable and subjective form that knowledge management takes and this framework, whilst presented in an hierarchical sequential manner, is not intended to be applied as such, but intended to underpin and guide the relevant definition and mission in a dynamic and evolutionary manner.

Domain 2

MANAGEMENT

Summary of justification for Creating sense of purpose/mission statement and commitment (Sections 3.3, A4.3, 5.2, 5.5. Appendix 1)

Management needs to commit time and resources to develop new organisational capabilities, communications and information technology to improve the quality and flexibility of the organisation. Feedback from empirical work suggests that a lack of commitment can inhibit the organisation's ability to improve internal communications and to engage with knowledge management. Although management commitment alone is not enough to secure success, drawing on theory derived from learning organisations, management must show commitment to build a shared vision and sense of purpose to actively cultivate positive organisational commitment rather than reluctant compliance. Lee and Kim (2001) Knight and Howes (2003) Lehaney et al (2003) emphasise the importance of organisational commitment to a new approach such as knowledge management but, with the exception of Lehaney et al, do not explicitly emphasise the importance of management commitment. Lehaney et al (2002) does recognise this when discussing the implementation of a knowledge management system as part of an implementation project. This framework is different in that it is intended to evaluate what needs to occur prior to implementation and is empirically and theoretically underpinned.

Summary of justification for Management style/approach including Trust, Delegation, Empowerment

(Sections 1.1, 2.2, 2.3, 3.3, 3.4, 4.3, 4.5, 4.6, 4.7, A3.2, A3.3, A3.4, A3.5, A3.6, 5.1, 5.3, 5.5, Appendix 1)

Management style or approach has a crucial impact on the extent to which an organisation may be successful in embracing the concept of knowledge management. Empirical evidence to underpin this demonstrates the importance of honesty, trust, respect, empowerment, consultation, teamwork and equal opportunities, all supportive of the knowledge management ethos. Drawing on management theory, and reviewing knowledge management literature, all explicitly identify management approaches that encourage, motivate and empower staff. Parlbay (2000), Davenport and Prusak (1998) and Senge (1992) describe the need for trust and confidence throughout the organisation, necessary to foster the appropriate culture for knowledge sharing. They include issues such as value and recognition, feedback on performance, empowerment and authority, participation in decision making, consultation, effective delegation etc. However evidence gathered from empirical research suggests that what is recommended in theory is not always applied in practice. For example, successful delegation requires the ability to communicate, share, and inspire confidence and support to succeed. Mann (1999), however, suggests that some managers retain activities because of insecurities, inability to trust others, which result in poor management generally, and low morale amongst the workforce. For knowledge management, this inability to share information or explicit and tacit knowledge is a significant obstruction to progress in an organisation and is an important component in the evaluation of an organisation's readiness to engage with knowledge management.

Delegation and empowerment are synergistic concepts. Empowerment is regarded as an important motivator in modern organisations and management practice. Flannery et al (1996) however point out that evidence suggests thinking and theory are more advanced than practice. Peters and Waterman (1988) promote shared values, experimentation and empowerment of the workforce. Management style, approach, delegation and

empowerment do not appear to have received adequate attention in the frameworks reviewed and currently available to the practitioner. This framework, therefore addresses this gap as well as being empirically and theoretically underpinned.

Summary of justification for Leadership

(Sections 3.4, 4.3, 4.7, A3.2, A3.5, A3.6, A4.3. Appendix 1)

Empirical evidence suggests that time to lead is an important factor. Managers that do not take the time to engage with staff will find increasing levels of demotivation, lack of leadership, and poor performance. Additional empirical evidence underpinning the importance of leadership is derived from a management development seminar conducted by the Author which identifies lack of leadership skills as being a key problem in the University of Luton case study, without which 'buy in' from staff is difficult to achieve. In the context of learning theory, Senge (1992) identifies the need for strong leadership skills to bind people together in a sharing environment. In relation to management theory, Mullins (1996) raises social issues including leadership as part of a human oriented system. Goh (2002) explicitly recognises the importance of leadership to achieve effective knowledge transfer; however this is neither theoretically nor empirically underpinned. Knight and Howes (2003) identify that leadership includes responsibility to deliver a knowledge management programme, though this is not theoretically underpinned. The place of leadership in this framework is underpinned by theory, empirical work, literature and reasoning.

Summary of justification for Logical Decision Making

(Sections 2.3, 3.2, 3.3, 4.3, A3.4, A4.2, A4.3, A4.4, 5.5).

The literature review identifies that external drivers such as HEFCE/W impinge on decision making and knowledge management and forms an important part of the environment in which Higher Education functions. Empirical evidence suggests that there is inadequate consultation between senior management and the workforce on decision making generally. Considering this in the context of theory, from a systems thinking perspective (Checkland 1993), senior management decisions in particular impact across the organisation vertically, horizontally, in the present and the future. The decision making process determines how effectively individuals will absorb knowledge

collectively, which then impacts at the organisational level. Drawing on management theory, a senior manager's ability to delegate and empower staff to make decisions at an operational level is an important motivator (Mann 1999) and could therefore contribute effectively to the knowledge sharing process.

Gao and Nakamori (2002) offer a systematic perspective on knowledge management providing a toolbox for practical knowledge users and draw on systems thinking to underpin this, indicating that this approach could be used as a lens to inform decision making and facilitate knowledge sharing, however this has not been empirically tested nor does it explore the organisational type conditions necessary for success i.e. evaluating an organisations readiness to undertake such a systematic approach. Similarly Balasubramanian et al (1999) refer to decision making at the implementation stage but this is not theoretically underpinned. Gao and Nakamori (2002) recognise the importance of senior management decisions to identify the goals of a knowledge management system, and the power and politics involved. They do not, however, discuss power and politics further to establish what the issues might be. Bolloju et al (2002) introduce an approach for integrating decision support and the knowledge process to build an enterprise decision support environment. This is based on decentralisation of decision making, correlates with empowerment and is underpinned by decision support theory. There is no empirical work to underpin Bolloju et al's work and the links with knowledge management remain weak. Snowden (2000) explores the knowledge process in relation to tacit and explicit knowledge and highlights how decision making creates an image of information flows in an organisation, from which results can be mapped linking different decision processes, but there is no methodology to underpin this. Joshi (2001) looks at decision making in the context of knowledge management behaviours. Joshi's work in this specific area is both theoretically and empirically underpinned, however, the overall framework that is finally produced is not tested nor does it reflect whether an organisation would be ready to engage with knowledge management. Hatten and Rosenthal (2001) refer to decision making in the context of corporate strategy and knowledge management processes, but there is no evidence of theory and reasoning

remains weak. There has been a significant amount of focus on decision making in the literature, management and organisational theory, and systems theory that this Element of this framework can draw from. The differentiator here is that the overall framework as well as this Element will be tested and developed further to refine the relevant approach for evaluating the readiness of an organisation to engage with knowledge management and as such consider an appropriate approach for an organisation to explore decision making in support and of knowledge management.

Summary of justification for Absorptive Capacity
(Sections 4.1, 4.5, A3.6)

The theory of absorptive capacity is discussed by Cohen and Levinthal (1990) and described as the ability of individuals to absorb knowledge collectively which impacts at an organisational level highlighting that organisations with a low absorptive capacity will have difficulties managing internal and external communications and knowledge flows. Cohen and Levinthal appear to imply a bottom up perspective, with no reference to the absorptive capacity of a senior management team in particular. The reason for including absorptive capacity as an Element in this particular Domain is because if an organisation is generally high in absorptive capacity, but the senior management team is low, similar problems in managing internal and external communications and knowledge flows are likely to emerge irrespective. This view is underpinned by empirical evidence gathered in the University of Luton case study. It is important, therefore for senior managers to consider this issue specifically and be prepared to undergo training and development and make time with open mindedness to new ideas and knowledge which then encourages, influences and engenders increasing absorptive capacity throughout the workforce beyond a bottom up approach.

Summary of justification for Training and Development
(Sections 3.3,3.4,4.2,4.6,4.7,A3.2,A3.3,A4.3,5.4 Appendix 1)

From the literature review, HEFCE recognise the need for more focussed and appropriate training and development which they demonstrate by making available funding for initiatives such as “Good Management Practice” (Aug 99/54). Since HEFCE promote knowledge transfer, sharing and collaboration such management

practices should encompass this. However, a common problem in Higher Education appears to be time to undertake personal training and development at every level. This is empirically underpinned from research undertaken in the University of Luton case study. Despite the introduction of a 360 degree assessment exercise and the opportunity to partake in management development activities, many senior managers experienced difficulties finding the time. Evidence suggests that it is particularly relevant in Higher Education for senior managers to consider management development because many have been promoted to management positions as a direct result of academic performance and technical expertise, not management capability and have not adequately trained as managers. Drawing from organisational management theory, if the right management approach to the concept of knowledge management is to be established, an increased awareness of the impact of different styles in the context of knowledge management would support and engender the right culture and working practice thus increasing the chances of success in knowledge management.

Considering organisational learning theory, the concept of knowledge management is synonymous with learning organisations and contributes to implicit and explicit development, both organisational and individual. Learning from local, regional, national and international experiences, sharing, contextualising of new knowledge and plans to take action are all synonymous with training and development (Davis and Davis 1998, Senge 1992). Further, the importance placed on training and development can reflect the perspective that senior management may have of their own intellectual property and the intellectual assets of the organisation. If so senior managers should lead by example and invest accordingly (Liinaken 1999). Binny (2001) recognises the importance of management development through the development of tacit knowledge and use of communities of interest to engender a learning culture. Knight and Howes (2003) refer to training and other analytical tools to draw out activities necessary to meet the knowledge management process. In both cases, however, this relates to implementation and lacks either empirical or theoretical underpinning that this framework provides.

Summary of justification for Change Management, Adaptability/Multiple Roles/Flexibility

(Sections 1.1, 3.1, 3.3, 3.4, 4.2, 4.3, A3.2, A3.4, A4.3, A4.4, 5.2, 5.4)

Change management is a significant factor in organisations, and this Element is empirically supported through research, which confirms that in today's competitive environment, the ability of managers to actually manage change was criticised (University of Luton, Spring IT). This resulted in the University of Luton taking action to improve by engaging in a holistic change management programme to establish an organisational culture that embraces cross organisational working practices, which could prepare the organisation for knowledge management. A specific change management focus group facilitated as part of this research identified key factors that managers would need to consider. These included staff's feelings of self preservation, communication, a perception of change as being destructive, increased levels of anxiety, disbelief, mistrust.

Staff attitudes such as this are an important measurement of the ability of an organisation to engage with knowledge management and can reflect the adaptability and flexibility of the workforce in a dynamically changing business environment (Barnett 1994, Ainley 1994, Zhang and Sharifi 2000, Warner 2000, Despres and Chauvel 2000). The evidence gathered from the University of Luton case study suggests that weak change management to support adaptability and flexibility is directly connected to the systems and procedures inherent and embedded in the organisation, as well as management ability to drive change, and all this encompasses.

Drawing on theory, Checkland and Scholes (1990) recognise that roles, norms and values of individuals will generate different perspectives and abilities in an organisation, which can significantly support or obstruct adaptability and flexibility. Values relate to the level of commitment and sense of purpose in the organisation, levels of flexibility, autonomy, perspectives of others, and performance and reward (Checkland and Scholes, 1990).

Drawing on the field of knowledge management directly, De Goojier (2000) provides a model of knowledge management which incorporates a behaviour framework intended to identify the levels of practice demonstrated by individuals, which is based on change management theory. Knight and Howes (2003) refer to change management, arguing that the strategy for change is likely to be driven from the middle and bottom of the organisation. Neither framework is in the context of evaluating the organisation's readiness to engage with knowledge management, but at a general or implementation stage. This framework is specific to evaluating an organisation's readiness and is underpinned by theory, empirical work and through such reasoning as has been undertaken here, provides for a more robust argument for change management to be included. The theoretical underpinning is derived from soft systems and critical thinking, strengthened by Lehaney et al (1997) for example, who refer to soft systems as a relevant method that has strong linkages with change management.

Summary of justification for Critical Discursive Opportunities
(Sections 2.1, 2.2, 3.3, 4.4, 4.7, A3.6, A4.3, 5.4)

From a theoretical perspective, drawing on (Ulrich 2003), critical discursion is not about finding categorical and rational answers, but recognising variables and influences, and remaining positively critical of ideas and initiatives to be creative or to improve a situation. This means asking the right questions and setting the right scene for critical discursion, but before this can be achieved it may be important for senior managers to critically review themselves, their management style and understanding communication as a critical dialectic process. This distinguishes information exchange from knowledge sharing because the emphasis is on learning and exploring solutions by incorporating diverse perspectives and considering complex relationships.

Senior management's recognition of power and domination is important to understand in the context of knowledge sharing, for example, empirical evidence gathered in the University of Luton case study explicitly states that senior management have the ability to enhance or ruin career progress, therefore it is difficult to speak out. The default position of staff is such that knowledge sharing would be obstructed, therefore it is the

responsibility of senior management to facilitate and engender confidence, trust and understanding to encourage critical discursion. Methodologically, the ethos and use of Soft Systems Methodology provides a relevant approach to progress this. Gao et al (2002) draw on critical systems thinking to develop a toolbox for knowledge users, however there is inadequate discussion about how this might be applied in practice and the framework has not been tested. This Element of the framework is a key issue for all Domains, but as with commitment and leadership may be more successful if driven and led by senior management.

Summary of justification for Relationship Management/Handling

(Sections 1.1, 3.3, 3.4, 4.2, 4.5, 4.7, A3.2, A3.3, A3.4, A3.5, A3.6, A4.3, A4.4, 5.2, 5.3, 5.4. Appendix 1, Appendix 2)

Drawing on knowledge management literature, relationship management is regarded as important because knowledge is still regarded as a personal rather than an organisational commodity and associated with power, money and organisational effectiveness. The dynamics of relationship management include the tension experienced relative to power and politics, competitiveness and collaboration, control and laissez faire leadership, participation and facilitation of sharing and learning. Referring to organisational theories, relationship management can be considered at an individual level, group level and between different cultures and structures. Considering learning theory, the learning cycle in an organisational context leads to the need for an appropriate management style or approach which regards effective communication as high priority and control that is capable of relationship handling, engendering a culture of trust, honesty, empowerment and participation. This view is empirically underpinned by the University of Luton case study. Checkland (1993) explicitly recognises relationship management as important when considering change that requires shifting attitudes or perspectives and understanding. He points out the complexity of problems and the rich interconnections and relationships between sets of parts. In the knowledge organisation such parts are predominantly made up of people. Bhatt (2002) highlights the relationship between individual and organisational knowledge and the independent and interdependent process from one to the other. Merali (2002) refers to the relationship between cognitive

action and social aspects of the knowledge management process in an organisational setting. Balasubramanian et al (1999) points to relationship management with other organisations and HR in the context of capability. Relationship handling appears to be relevant to all aspects of the framework, and the theoretical and empirical underpinning is explicitly demonstrated.

Summary of justification for Communication

(Sections: 1.1, 3.3,4.3, 4.4, 4.5, 4.7, A3.1, A3.2, A3.3, A3.4, A3.5, A4.3, A4.4, 5.1, 5.2, 5.4, 5.5 Appendix 1, Appendix 2)

Communication is a key factor in knowledge management, crossing all aspects of the organisation, and as with relationship handling, is relevant to all aspects of the framework. The rationale for entering communication here is as a result of empirical work, which identifies communication as being an issue in relation to senior management in particular, and therefore as an element that emanates from senior management throughout the organisation, affecting learning and cross organisational working practices. This incorporates quantity, quality, formal, informal, expectations management, and attitudes, tone, use of language, targeting specific audiences, categorising, contextualising all within the scope of communication. The literature review discusses the continuum of communication from hard based to soft. The HEFCE recognise that in higher education, investment in communication and associated technology is necessary to improve the quality and flexibility in Higher Education thus improving competitiveness. Drawing on theory of communication, Watzlawick (1968) delves into what communication means and the importance of conveying information which incorporates behaviour as well. Fineman and Gabriel (1996) explore story telling as an important emerging informal communications channel. Empirical research identifies that informal communication can facilitate peer and social support and opportunities to discuss issues of concern that may arise, which is an important element influencing organisational attitude. Ulrich (2003) discusses communication from a critical perspective pointing out that it is not just electronic information exchange, but a dialectic and critical discursive process that is important.

Communication and transparency are synergistic elements in an organisation and relate to the knowledge that is actually shared, and senior management's awareness of knowledge in the organisation. The challenge for managers is how make knowledge and processes comfortably explicit and transparent without risking the organisation. Drawing on the theory of organisational structure and culture, strong horizontal and vertical co-ordination and communication may be necessary to both engender transparent processes whilst managing the risk.

Referring to theory of organisational structure and culture, different issues in relation to communication and structure are considered, and the extent to which an organisation can be easily facilitated, centrally controlled or devolved. Drawing On Checkland's (1993) Soft Systems Methodology, as with knowledge management, communication is a key aspect that is core to systems thinking, therefore providing a sound methodology for the development and implementation of a framework.

Domain 2

STRATEGY

Summary of justification for Conversion of knowledge into measurable targets
(Sections: 1.1, 4.2, 4.5, 4.6, 4.7, A3.3, A3.6, A4.3, A4.4, 5.2)

As with any business initiative, the conversion of knowledge into measurable targets is crucial, because without the understanding and ability to measure, progress is unlikely to be successful. This is directly connected to purpose, and the definition of knowledge management for the organisation, to engender understanding about what is actually be measured, from which the elements of each Domain can have targets established that can be measured. The methodology to underpin the measurement of targets can be derived from Soft Systems Methodology, as Checkland (1993) explicitly recognises transformation to be the conversion of inputs to outputs and how new systems, procedures, culture or service change the situation. It is important to establish what measurable targets can be implemented to monitor transformation as this can vary according to different perspectives and therefore be virtually limitless.

Drawing on management theory, Thompson and Strickland (1996) define strategic management as consisting of five interrelated managerial tasks which include converting the strategic vision and mission into measurable objectives and performance targets. Empirical research identifies the want and need for converting strategy into measurable objectives and that whilst this does occur, feedback and recognition of achievements remains weak and problematic.

Summary of justification for Evaluate, Review, Improve
(Sections: 4.3, A3.4, A3.6, A4.1, A4.3, 5.4)

Drawing on management theory, the process of evaluating, reviewing and improving are important to sustain progress (Thompson and Strickland 1996), but the approach taken should be considered if knowledge management is to be maintained. Davenport and Prusak (1998) propose the evaluation of performance and provision of incentives based on sharing, with status and rewards going to knowledge sharing champions who strive to achieve positive outcomes. Lee and Kim (2001) suggest that the effectiveness of knowledge should be evaluated, the environment should be monitored and best practice shared to improve core knowledge areas and activities. Checkland's (1986) Soft Systems Methodology provides an appropriate methodology to undertake the process of evaluation, review and monitoring in the overall approach to evaluation of an organisations readiness, and for subsequent implementation of the framework. Empirical evidence suggests that evaluating, reviewing and improving including the required feedback are areas that should be considered in a framework.

Domain 3

EXTERNAL ENVIRONMENT

Summary of justification for external environment including knowledge initiatives with - community groups, customers, other stakeholders. -Global issues- language dominant cultures. Diversification-consultancy & research & development.)

(Sections: 1.1, 3.1, 3.2, 3.3, 3.4, 4.2, 4.3, 4.5, 4.6, 4.7, A3.2, A3.3, A3.4, A3.6, A4.3, 5.3, 5.2)

The importance of external knowledge management initiatives have been recognised and reasoned throughout knowledge management literature, for example Allee (1998) includes external stakeholders such as customers, strategic partners, suppliers, investors and communities as external intellectual capital. Davenport and Prusak (1998) propose that external relationships can provide competitive-intelligence. In addition, the inclusion of external knowledge initiatives can be theoretically underpinned through theories of strategic management, for example Lawrence and Lorsch (1967), Truch (2001), Ansoff (1996), Clarke and Clegg (1998). Clarke-Hill and Glaister (1995) discuss structural development as an organisation grows, leading to vertical integration, and research and product diversification. A key aspect of knowledge management is this external interface and a knowledge management strategy and culture could facilitate a more controlled and united diversification of the organisation by ensuring open lines of communication, sharing and innovation thus reducing the risk of divisions, duplication and loss of creativity. The literature review highlights the pressure on Higher Education institutions to become increasingly self funding through research and external knowledge transfer.

Empirical underpinning has been derived from the University of Luton case study which confirms that irrespective of how the student or external business relationships are viewed, the shared knowledge and interaction between staff, staff and students, and staff and external business and stakeholders impacts on the extent to which an efficient and co-ordinated service and provision may be delivered. HEFCE strategic objectives and organisational aims, highlight the pressure Higher Education institutions are under to engage with external knowledge management initiatives. HEFCE objectives include the development and maintenance of effective partnerships with institutions, employers, other funding and professional bodies, and others with a stake in higher education, by providing clear and open information and promoting collaboration between them.

Research into frameworks currently available reveals various approaches to the external environment. Abou-Zeid (2002) refers to the external cognitive domain which includes

customers, suppliers, partners and competitors, and the need for the knowledge enabling process to address cultural issues. Lee and Kim (2001) discuss networking, which they define as an external integration stage where organisational knowledge is networked with suppliers, customers, research firms and universities. Hatten and Rosenthal (2001) consider external contracting and partnerships and the acquisition of new skills and abilities achieved through partnership. None of these frameworks consider the readiness of an organisation to engage with external knowledge initiatives, nor are they theoretically underpinned. When considering the external environment it has become increasingly important for competitiveness to consider the global environment and an organisation's ability to create, share and utilise knowledge on a global scale. In the modern service industry the increase in virtual working and advancement of technology means that more organisations are engaged in high technology activities in a global environment.

A relevant theory and methodology that underpins this element is drawn again from Checkland (1993). Checkland discusses designed systems which can be physical or abstract, their current condition and relationship with external elements which affect a system and the condition of those external elements.

Domain 3

INTERNAL ENVIRONMENT

Summary of justification for Internal Environment

Sections: 1.1, 3.1, 3.4, 4.2, 4.4, 4.5, 4.7, A3.3, A3.4, A3.6, A4.3, 5.2, 5.3

The internal environment in this case refers to the physical opportunity for formal and informal interaction to support explicit and tacit knowledge sharing. It has been separated from culture; business processes etc, because these aspects are dealt with in other Domains within the framework. The emphasis here is placed on physical facilitation opportunities to engage in a social and creative way, through both formal and informal communication. Empirical research from the University of Luton case study identifies concerns about opportunities for staff to engage informally in communal areas, for example provision of cyber cafés and social space which can engender greater creativity and tacit knowledge sharing than formal meetings. This facility was

subsequently introduced. This is an aspect of knowledge management that should be explored further and evaluated in the context of readiness to engage with knowledge management.

Tacit knowledge is the experience and wisdom developed as a result of using and applying hard information, whilst absorbing the internal and external environment and culture of the organisation and its industry. Tobin (1996) discusses the knowledge network in relation to transformational learning, focussing on various approaches which provide the organisation with information about internal and external knowledge bases, individual and group learning facilitation. But this type of learning about the internal environment is still formal, whereas the informal is that area which is difficult to translate explicitly but adds high value to the intellectual base of the organisation and contributes to increasing capability. Further, it would be remiss to think that all knowledge sharing can be achieved through formal processes and activities because individuals still regard their knowledge as power and security, and to explicitly give it up to others would weaken their position, but with the right internal environment, where knowledge owners are provided with the opportunity to choose who they share or collaborate with may still achieve greater advantage for the organisation.

With regard to the internal technological Domain, until recently, more emphasis has been placed on IT systems as providing all the answers to implement knowledge management, with less regard for the human side of knowledge management. Hughes et al (2000) demonstrate that even if the emphasis is on technology and virtual working, issues around communication, managerial problems in relation to monitoring and control of the workforce and tension between different virtual teams still emerge.

Putting technology in its rightful place means recognising the activities that will facilitate knowledge management, for example Balasubramanian et al (1999) identify primary activities including capturing, transforming, classifying, maintaining, discovering and disseminating information, which should be linked to strategic planning. Apart from selecting the appropriate software for undertaking these activities,

Balasubramanian et al state that it is the interface between IT and people that will render chosen software effective or ineffective.

Domain 4

PEOPLE

Summary of justification for Training and Development

(Sections 3.2, 3.3, 4.1, 4.2, 4.6, 4.7, A3.2, A3.3, A3.4, A4.3, 5.4. Appendix 1, Appendix 2).

Higher Education literature highlights that as with management development, HEFCE provide funding in support of Rewarding and Developing staff (Dec 00/56) in recognition of the changing roles and combinations of functions in the Higher Education sector. Empirical research clearly indicates that time to attend training is problematic. However, the workforce perception of what constitutes training and development could be too limiting in that it appears to focus very specifically on central provision of training and development rather than the broader opportunities that staff engage with such as distribution of information networks, discussion during meetings, attendance at professional conferences, peer review, mentoring etc... Inherently and unlike private sector organisations, training in the Higher Education sector is a voluntary matter. This may result in one of two scenarios; first either staff will feel motivated enough to receive and engage with learning through a rich variety of formal and informal activities, or they will continue in unconscious ineffectiveness. The assessment of an organisation's overall training and development activities will reveal the current state of this element, highlight good practice and effectiveness of activities and distinguish that which perhaps should be compulsory to improve overall performance and competitive stance.

Theoretical underpinning for this element of the framework has been derived from organisational learning theory, for example Senge (1992), Bennis and Nanus (1985), Davis and Davis (1998), who discuss individual learning and the organisational impact. Senge in particular considers the systematic approach and impact across the organisation, and as such, is complementary to the systems approach proposed for the framework.

Knowledge management literature generally recognises the importance of learning, training and development. In relation to Intellectual capital and intangible investments, Liikanen (1999) highlights the urgency to invest more in intangibles which include training, research and development. Organisational and management theory also highlights the importance of training and development, but when reviewing knowledge management frameworks, few explicitly address this. Binny (2001) refers to training and the development of tacit knowledge through communities of interest and engendering a learning culture. Snowden (1994) recommends training audits, and Knight and Howes (2003) propose and provide analytical tools for training. In each case there is no indication of theoretical underpinning to support approaches. This element of the framework does draw on theory, and empirical work.

Summary of justification for Expertise Mapping (who knows what)
(Sections 1.1, 3.3, 4.3, A4.3).

Literature suggests that it is particularly important to understand cross-organisational working opportunities and as such the mapping of expertise is necessary to expose such opportunities. Hylton (2002) refers to categorising knowledge workers, where they are located in the organisation, what job they do and what professional and academic qualifications they have achieved. Snowden (1994) identifies four key elements as the process within which knowledge management is progressed, which includes knowledge mapping. Snowden defines knowledge mapping as a process of discovery through the use of judgements and decisions and includes participation, communication, team formation, and creation.

Empirical evidence gathered through the University of Luton case study indicates that there are issues relating to confrontational behaviour by older academic staff particularly toward their younger counterparts, which obstruct good practice for cross organisational interaction, succession planning and organisational memory and may obstruct expertise or knowledge mapping. A clear and agreed approach to knowledge mapping would

assist in resolving such issues by identifying alternative avenues to access new knowledge and perhaps assisting in changing the culture for sharing to become more acceptable.

Summary of justification for Matrix team activities

(Sections 3.3, A3.4, A3.6, A4.3, 5.2. Appendix 1)

Empirical evidence gathered in the University of Luton case study suggests that there are good examples of matrix team activities such as Teaching Quality Assessments, where matrix team working in the organisation improves levels of communication and interaction, with both explicit and implicit knowledge sharing, and the corresponding empowerment, authority and control to achieve positive outcomes.

According to organisational theory, a matrix team can encompass a wide variety of project oriented business activities, effective training and broad exposure to strategic management. It maximises efficient use of functional management, fosters creativity and sources of diversity. From a knowledge management perspective; the matrix team may be the most effective in providing the type of culture that facilitates creativity, sharing and transfer of learning and knowledge. Matrix teams do not reflect a true embedding of the concept of knowledge management in the organisation, but can provide an incremental progression toward cross organisational working and change to become more engaged with knowledge management.

Summary of justification for Feedback mechanisms

(Sections 1.1, 3.3, 3.4, 4.3. Appendix 1)

Empirical evidence gathered in the University of Luton case study revealed that there is little recognition for the work produced and poor feedback on performance and praise for good work; The majority of staff are dissatisfied with the level of feedback on performance and praise for good work. However, most feel that they have accomplished something worthwhile at work. This includes formal and informal feedback mechanisms.

Learning theory advocates the need for feedback in relation to positive performance management, development, motivation and so on. As such, an appropriate knowledge management strategy should recognise the value of staff, especially in an organisation such as a university where experts specialise in knowledge based work, and the concept of development through learning and sharing should be based on reciprocal respect, confidence, feedback and trust in individuals' contribution to the overall organisation.

Only one knowledge management framework reviewed identified feedback to be of significant relevance, i.e. Arora (2002) recognises feedback as one of the key aspects of communication in knowledge management.

Summary of justification for Roles

(Sections 3.2, 3.3, 4.3, 4.7, A4.3, A4.4, 5.1, 5.2)

Empirical evidence gathered from the University of Luton case study highlights that roles of staff are likely to change, as they undertake different combinations of functions at different stages of their careers and as such values and norms may also change. Newly learned knowledge is translated into new goals, procedures, roles and performance measures (Bennis and Nanus 1985).

Drawing on knowledge management literature, Connell et al (2001) distinguish between different participants in different roles within a system, for example, those who are experts to be consulted and those who require knowledge. Pérez Pérez et al (2002) refer to knowledge management activities as the activities undertaken in order to achieve the requirements of specific roles in the context of knowledge roles and in relation to the feasibility of these roles for teleworking. Zack (1999) recognises that knowledge management roles relate to cross-organisational processes.

From a theoretical perspective, Checkland (1993) highlights that due to the nature of human beings different accounts of what may seem to be the same situation will emerge

and such accounts can add to or detract from improvement in situations depending on previous experiences, understanding and overall knowledge. This provides richer information about the organisation, the participants, roles, norms and values. In this sense, employees should know of their individual involvement and context in a knowledge management system, and as with any organisation will define the mission or purpose, contextualising it according to their roles. For example, roles relate to social positions that are recognised by individuals in a given situation and roles are defined either by position or behaviour. Positions can change and subsequently roles in the situation can change, therefore the contribution to knowledge may differ.

Summary of justification for Critical Discursive Opportunities

(Sections 2.1, 2.2, 3.3, 4.4, 4.7, A3.6, A4.3, 5.4)

Repeating what was stated in the management element, from a theoretical perspective, drawing on Ulrich 2003, critical discursion is not about finding categorical and rational answers, but recognising variables and influences, and remaining positively critical of ideas and initiatives to be creative or to improve a situation. Whilst for management this involves asking the right questions and setting the right scene for critical discursion, the extent to which the broader workforce wish to be engaged in such a way or have been engaged can depend on many variables such as motivation, confidence, trust, time, interest and so on. This Element is important because the evaluation of an organisations readiness in this context may differ from management's perspective and the broader workforce's perspective, for example, referring to empirical evidence gathered in the University of Luton case study there was a view that senior management have the ability to enhance or ruin career progress, therefore it is difficult to speak out. The default starting position of staff is negative and demonstrates that true knowledge sharing would be obstructed.

Summary of justification for Incentives

(Sections 3.2, 3.4 ,A3.4, A3.6)

Drawing on literature, when considering the key issues that the HEFCE raises, several areas emerge that should be considered within a strategic framework that would contribute to the readiness of higher education institutions to engage with knowledge

management including reward and recognition of employees and incentives to encourage knowledge sharing. This is demonstrated through a HEFCE funding initiative "Rewarding and Developing Staff (Dec 00/56)

From an organisational theory view, Handy (1993) highlights the position of power, expertise and knowledge, which, when considering knowledge management raises the challenge of an appropriate structure and incentives or other motivational activity to share knowledge to the benefit of the business rather than to serve personal interest.

Empirical evidence gathered through the University of Luton case study suggests that there are no real personal incentives in place that would encourage knowledge sharing.

Reflecting on the frameworks reviewed Arora (2002) comments on the need for incentives within the context of the application of the Balanced Score Card to knowledge management. Lee and Kim (2001) introduce the concept of incentives at a propagation stage of introducing a knowledge management process.

Summary of justification for Job Rotation/ Communities of Practice (Sections A3.6, A4.3)

Drawing on organisational learning theory, job rotation and communities of practice can create common ground through education, discussion, publications and teaming (Davenport and Prusak 1998). Arora (2002) discusses knowledge innovation in the context of communities of practice, and in relation to skill enhancement, suggesting that some activities such as job rotation, and communication improves competence. Duru Ahanotu (1998) highlights the importance of cross-organisational working and communities of practice to ensure that diverse viewpoints are taken into consideration. Snowden (1994) stresses the importance of communities of practice and the extent to which an organisation engages in initiatives such as this to share, create, and improve knowledge and learning.

Empirical evidence gathered through the University of Luton case study highlights that there is a lack of cross organizational working and communities of practice and the culture would need to change to accommodate this.

Domain 5

PROCESSES

Summary of justification for Central Control versus Devolved Process
(Sections 3.2, 3.3, 4.4, A3.2, A3.4, A3.5, A3.6, A4.3)

Empirical research conducted in the University of Luton case study shows that with a developing and changing environment, central control can be advantageous to drive change through specific areas such as staff development, which can support and sustain the culture shift, and the management of communications and information. It is questionable, however, as to whether tight central control leads to embedness in the organisation and whilst certain activities may benefit, others could suffer as a result. For example proposals for information management in the University of Luton recommended a central policy that set document life “kill by” dates, rules for publishing to the intranet, parameters for design structure, functionality and “house style” and guidance provided on acceptable use. In addition, the University of Luton recognised the need for a strong professional central administrative core to facilitate smarter working systems essential to establish business processes capable of supporting strategic repositioning in a competitive environment. Staff development and training, however, was split between corporate and academic and the view was held that locally driven development would be more effective. The disadvantage is likely to be reduced cross fertilisation of ideas and a ‘silo’ mentality.

Drawing on organisational theory and management theory, centrally controlled and standardised systems reflect the concept of Scientific Management which has advantages in relation to knowledge management, as long as it is tempered with a rational and controlled management approach that is participative. The desire for central control in functional structures tends to reflect a management approach that is based on central knowledge, power and control. The disadvantages include rivalry and conflict between

functional areas, with obstructions to the sharing of information, co-ordination and inter-functional decision making, and limitations in management development. The challenge therefore relates to centralised control of certain activities balanced with an appropriate management attitude and capability that engenders participation and supports knowledge management.

Gibson, Ivancevich & Donnelly (2000) highlight that different types of structure determine the extent of formalism, complexity and centralisation. Handy (1993) proposes that appropriate structure is determined by a variety of forces such as technology, market size and people and the primary choice is between uniformity or centralisation/standardisation, and diversity/decentralisation. Advances in technology, increasing instability and competitiveness, is to some extent diminishing the traditional form of central control, for example the virtual organisation, model or system, however, some form of central control or leadership is necessary to ensure the objectives of the business are achieved and from this perspective, the overall management and control issues remain constant, i.e. functional, hierarchical and bureaucratic. This brings the discussion back to the conclusion that there are tensions between the need for centralisation and standardisation and the culture that is inherent within the structure to facilitate this, in addition to the need for a more human relations approach to management of the organisation to engender knowledge creation, sharing and utilisation.

In reviewing current knowledge management frameworks, there is only one reference to this issue from Bolloju, Khalifa, Turban (2002). They introduce a framework based on decentralised decision making and the requirements of decision-makers to combine different types of data and knowledge (both tacit and explicit) available in organisations.

Summary of justification for Virtual Business Processes

(Sections: 1.1, 3.1, 4.4, 4.7, A3.2, A3.4, A3.5, A3.6, A4.3).

Literature points out that the higher education sector is not restricted to the notion of a fixed and rigid organisation in permanent or semi permanent environments, but as with many modern organisations, embraces the notion of transition and virtual working with

fluid, ever-changing knowledge communities, that increasingly operate in project teams as the situation requires. The higher education sector is striving toward E learning and virtual working environments, which require collaborative project working and cross-functional teams.

Drawing on organisational theory, various human resource issues are of concern in the increasing shift to the virtual organisation with greater use of technology to underpin this. These organisational and management changes erode membership of specific groups and affect levels of communication, continuity and knowledge sharing as oppose to information sharing and potential information overload.

Focussing very specifically on technology and considering virtual working, Thomas (1999) highlights some of the challenges for management such as the erosion of teamwork, affiliation to the organisation, increasing social problems, loneliness, lack of communication and erosion of the corporate culture and higher job turnover, all of which impact on knowledge management.

Considering organisational structure, Walter (2000) suggests that virtual organisations are a logical continuation of the development of the industrial organisation, with important consistent management characteristics- knowledge management, technology management and relationship management to achieve market competitiveness. Hedberg (1981, in Despres & Chauvel 2000, p269) describes virtual organisations as “metasystems that tie various partner companies and individual actors together in order to share resources, pool competencies, and gain flexibility to produce good value for and with customers”. This is undertaken through the use of the Internet as a tool in conducting business, which tends to be specific to projects. Hughes et al (2000) point out that from a management perspective, in the virtual organisation, workers will show more allegiance to the product (or subject) or team they are involved with than the organisation. Again representing an added challenge and complexity when considering knowledge management in a modern organisation.

Summary of justification for Quality Assurance Processes and Value for Money

(Sections: 1.1, 3.2, 3.3, 4.7, A3.6, A4.1, A4.3. Appendix 2)

knowledge management is about action which improves the quality of decision making and brings with it concerns about planning, performance review, productive capacity, social and commercial contribution, value for money and quality. Greater pressures are being placed on the workforce in Higher Education, to improve quality, accountability (HEFCE August 00/36), and performance (HEFCE February 99/11), to maintain standards of quality, improve performance, and ensure appropriate lines of accountability, responsibility and responsiveness.

Empirical evidence gathered through the University of Luton case study demonstrates that there are good examples of working practice in Higher Education that compliment knowledge management approaches, such as Teaching Quality Assessments where matrix team working in the organisation improves levels of communication and interaction, with both explicit and implicit knowledge sharing, and the corresponding empowerment, authority and control to achieve positive outcomes. This research also highlights that an organisation that functions only on people and knowledge should encourage a non-hierarchical approach to knowledge to improve the quality of ideas because this is more important than the status of source and requires an integrated human resource *and* knowledge management strategy.

Exploring current knowledge management frameworks, Achterbergh and Vriens (2002) recognise the need for co-ordination and quality standards meetings to monitor performance. Kwang et al (1999) apply a quality strategy to knowledge management, which is then connected with a cost model to produce a knowledge management framework, auditing procedures, and reviewing procedure for new proposals to assess the potential for change.

Summary of justification for Policies/Procedures

(Sections: 1.2, 3.3, 4.3, 4.6, A4.3. Appendix 2)

Empirical evidence suggests that organisational change, if not managed well can result in inconsistencies in policies and procedures, which contribute to negativity and

demotivation, impacting on culture and negatively affecting the concept of knowledge management. The outcome of focus groups confirms the need for central policy and procedures for guidance and control, which includes policy and procedures to ensure document life “kill by” dates, rules for publishing, data inputting, and guidance on acceptable use. Such guidance and control assists in providing the boundaries within which the workforce operate.

Achterbergh and Vriens (2002) suggest that policy and procedures relate intelligence to control ensuring that the organisation defines its identity in such a way that fits developments in its environment. This points to the need to consider the link between the hard and soft aspects of knowledge management to policy and strategy to provide a deeper understanding of knowledge management that filters down to operational levels when considering a controlled approach to policy and procedure.

Summary of justification for Intellectual Capital /Performance Measurement

(Sections: 1.1, 1.2, 2.4, 3.2, 3.3, 3.4, 4.3, 4.5, 4.6, 4.7, A3.1, A3.2, A3.3, A3.4, A3.5, A3.6, A4.3, A4.4, 5.2, 5.3. Appendix 1, Appendix 2).

Drawing on literature, Snowden (1994) states that intellectual capital systems is one of the most common knowledge management projects, which are generally IT based, and should be developed through effective knowledge mapping and creation of communities of competence to ensure effective use of IT. Intellectual capital includes organisational and individually accumulated knowledge, ability, skill and expertise. Individuals however do not necessarily possess the skills that incorporate everything (Quinn, Anderson and Finkelstein, 2000). Managers and organisations, therefore, need to understand the value and contribution of intellectual assets and increase their worth, effectiveness and exploitation. Individual knowledge, organisational memory, and intellectual content can be improved through teamwork and learning (KPMG, 1999. Smith and Irving, 1997).

Intellectual capital needs indicators to measure the performance of a company which may include accounting, investment, and disclosure of information and should be tackled

in an inter-disciplinary way based on research and development, innovation, training and marketing (Liikanen 1999). Intellectual capital, however, is difficult to measure. Whereas physical assets are stable and consistent and can be accurately valued and depreciated, intellectual capital can not be accurately valued and can appreciate as well as depreciate, therefore physical assets provide a less complex system of valuation.

Clearly finance and accountancy procedures will assist in establishing whether knowledge management is likely to thrive or not. This incorporates issues such as internal competition for resources, performance measurement, models that will underpin and make transparent the benefits of knowledge management. Knowledge management should produce outputs which include financially tangible or intangible advantages such as increased ability to compete, profit generation, greater organisational effectiveness, improved quality. Traditional accountancy procedures differentiate between tangible and intangible assets, and intellectual capital represents all the assets of a company not represented on a balance sheet. Allee (1998) describes intellectual capital as including: people with their knowledge, skills, experience and problem solving abilities; processes, such as systems, communication technologies, databases, documents, patents, copyrights and other codified knowledge; and the customer which represents external capital and includes strategic partners, suppliers, investors and communities.

Exploring underpinning theory in this element, Arora (2002) uses the Balanced Score Card to align management processes, introduce performance measurements and focus an organisation to implement knowledge management. This includes measurement of intellectual capital, recognition and reward. Binny (2001) introduces asset management, which involves explicit knowledge assets and processes relating to identification, exploitation and protection of intellectual property. Snowden (1994) introduces a framework intended to provide a context for the practices of knowledge management and a perspective for the role of intellectual capital assets within an organisation.

Changes in the higher education sector have placed greater emphasis on performance

review, productive capacity, social and commercial contribution, value for money and quality. Greater pressures are being placed on the workforce, to improve performance (HEFCE February 99/11), and empirical evidence suggests that there has been little recognition for the work produced and poor feedback on performance and praise for good work in practice. If the success of knowledge management is to be judged usefully, it must be linked to performance measurement of the business areas on which it impinges and to achieve this participatory approaches to the development and implementation of performance and knowledge management systems are advocated.

Bennis and Nanus (1985) propose that newly learned knowledge should be translated into new goals, procedures, roles and performance measures and in this sense the concept of the learning organisation can provide individual and collective contribution to improve performance, engendering the trust and interdependency among teams to achieve higher outputs.

Herzberg (1959 in Mullins 1996) discusses motivation, stating that if motivating factors are present, they will result in high performance. Motivating factors include job security, quality of supervision and management, and interpersonal relationships.

Managers tend to be judged on the performance of their staff, therefore, an organisation will be judged by the collective actions, abilities and knowledge of the entire workforce. Strategically therefore training, development, personal mastery and subsequent performance are essential elements within the human resource strategy. Cross-organisational interaction, knowledge sharing and learning may improve administrative problems and performance before they fall into decline, because this is likely to improve the ability to anticipate potential problems rather than react to them.

Davenport and Prusak (1998) comment on the importance of linking knowledge to business strategy stating that although in practice this link is rarely made, most knowledge management projects do actually improve the efficiency or effectiveness of individual departments or business processes. The more diverse the organisation,

however, the more complex the performance measurement will be and for success will require encouragement and support through appropriate rewards and recognition. Davenport and Prusak (1998) identify Knowledge Transfer Inhibitors and Potential Solutions and propose that performance is evaluated based on knowledge sharing, with incentives such as status and rewards going to knowledge owners.

Arora R (2002) uses the Balanced Score Card to align management processes and introduces performance measurements, asserting that this provides a performance measurement system, structured in a way that may lead to a least resistant path and places the main emphasis on people. The Balanced Score Card may provide an effective tool to progress an organisation to shift the emphasis from accountancy based on tangible easily measurable items, to more intangible and value driven performance measures. Pervaiz et al (1999) discuss measurement, including definitions of measurement, development of measurement, performance measurement and measurement systems. De Gooijer (2000) introduces a model of knowledge management for measuring the performance of knowledge management strategies for a public sector agency. Within the model, there are two frameworks, the first is intended to measure knowledge management performance and is based on a balanced scorecard approach. The second is a behaviour framework intended to identify the levels of practice demonstrated by individuals and is based on change management.

Drawing on theory, Checkland and Scholes (1990) present a logical approach that could be used for performance measurement based on an analysis of input to output, (do X by Y in order to achieve Z). Efficiency, effectiveness and efficacy can be measured according to the amount of output in relation to the amount of resources used to achieve an optimum process within the scope of a situation.

Domain 5

COMMUNICATION ACTIVITIES

Summary of justification for Communication Activities
(Sections: 3.2, 3.3, 4.4, 4.5, A3.4, A4.3).

Empirical evidence demonstrates the importance of communication activities within the organisation to encourage honesty, trust, respect, empowerment, consultation, teamwork and equal opportunities, all supportive of the knowledge management ethos, and on a practical level, reasonable access to the Intranet from networked desktop computing resources. Different communication activities assist in the conversion of tacit to explicit knowledge, complementing and implicitly contributing to the organisation.

Peters and Waterman (1988) recognise that there is an immense network of informal communication and open access to managers, a “virtual technology of keeping in touch”. Tobin (1996) discusses the knowledge network in relation to transformational learning, focussing on artefacts such as inventories of knowledge assets, i.e. data bases which provide the organisation with information about internal and external knowledge bases, learning resources and tools database, individual and group learning facilitation.

Merali (2002) introduces ‘Relationship Scripts’, which refers to relationships between individuals, inter organisational knowledge networks, credibility and filtering of information. Snowden (1994) refers to network management, training audits and best practice exchange. Lee and Kim (2001) refer to networking as one of four key stages in knowledge management. The networking stage is an external integration stage where organisational knowledge is networked with suppliers, customers, research firms and universities. At this stage the focus of organisational efforts become more specialist based on core knowledge and other required knowledge is outsourced.

Examples of activities which support communicating and networking include:

Fairs

Talk rooms

Conference report sessions

Yellow pages

Mentoring

Organisational publications

Communities of Practice

Action Learning Sets

External networking with agencies, business, customers

Knowledge Bank

Table 6.4.2 summarises the justification for including the remaining Elements in the framework. The table identifies each Domain and Elements with a summary of justification reached through critical reflection, for their inclusion and where this has been derived from in the main thesis where further detail can be located.

The following, Figure 6.4.1 presents the revised framework version two highlighting the Domains. Figure 6.4.2 illustrates the Elements within Domains version two. The list of Elements may not be exhaustive, because an organisation may identify additional Elements that require consideration according to their specific circumstances.

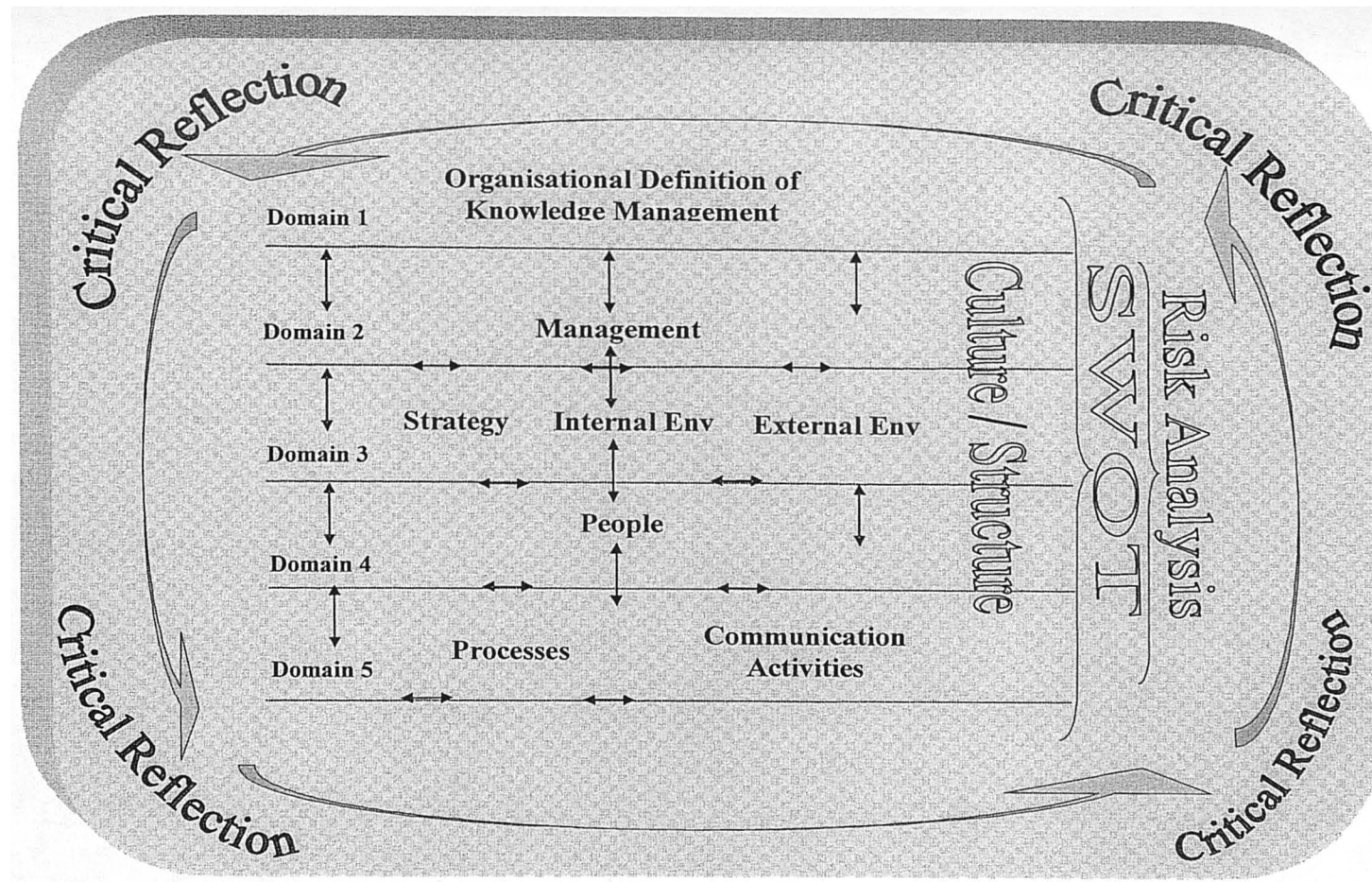


Figure 6.4.1: Revised Framework Version Two (Domains)

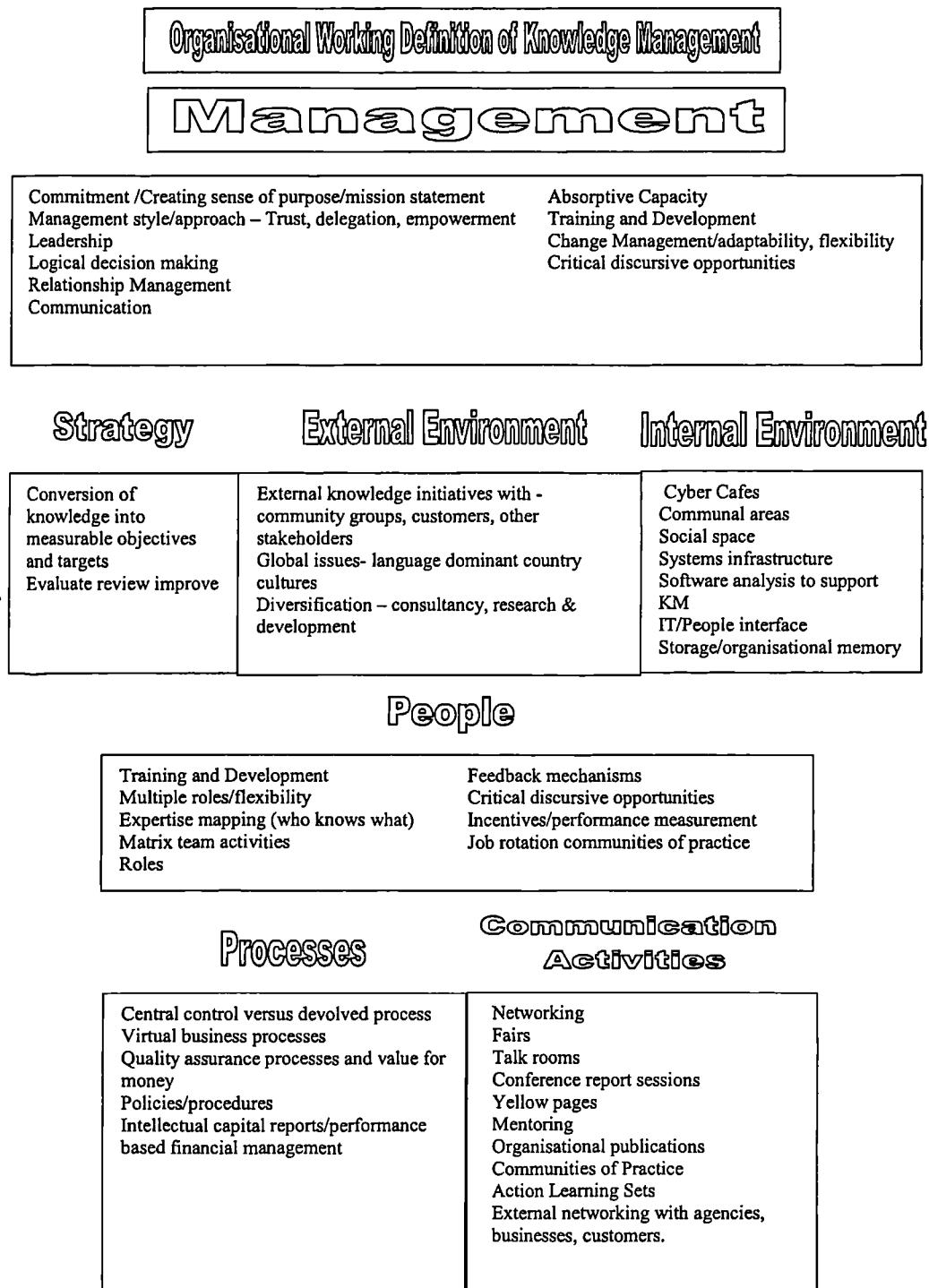


Figure 6.4.2: Revised Elements within Domains, Version Two

The initial approach to evaluation is introduced in table 6.3.1, based on Skyrme and Amidon's (1997) six questions of investigation. Following evaluation, the results of the assessment can be summarised by applying a SWOT and risk analysis as suggested from feedback received from the University of Lincoln focus group (appendix 7). To provide context, an overview of the framework is illustrated in figure 6.4.3:

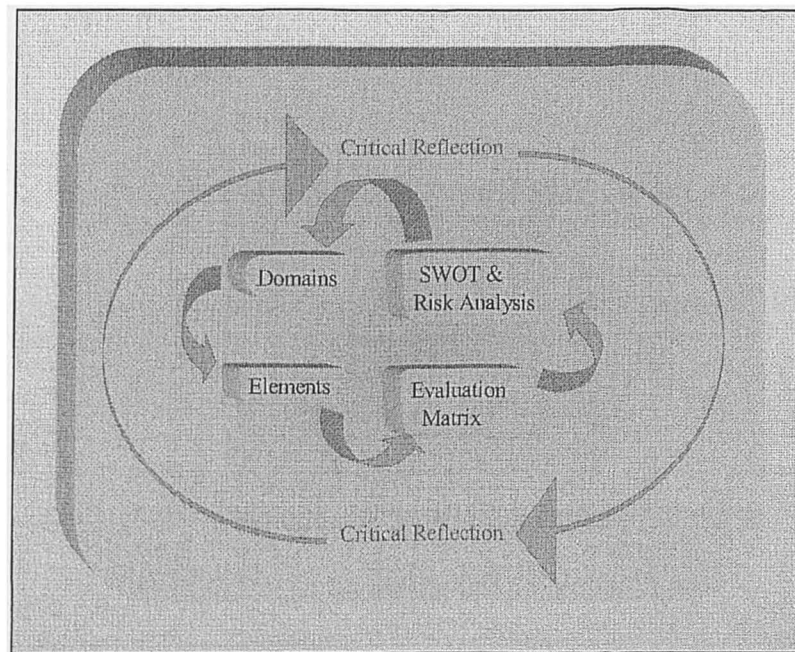


Figure 6.4.3: Overview of Framework

The overview of the framework identifies that the entire concept has been developed through a cycle of development, critical reflection and improvement, based broadly on Soft Systems Methodology, the latter has been accused of not being critical, but based on consensus and compromise rather than radical improvement or change (Jackson 2000). The critical reflection dimension was applied by the author in the development of the framework, and a knowledge based evaluation matrix introduced in 6.3.1. But the evaluation matrix is limited to the extent that it only guides the actual questions to be asked in the context of knowledge management, which does not necessarily evaluate the organisation's readiness from a robust critical perspective. Critical research therefore was drawn upon to explore its applicability.

Critical research assumes that social reality is historically constructed and produced and reproduced by people. Critical research advocates that although people can consciously act to change their social and economic circumstances they are constrained by various forms of social, cultural and political domination. Critical research exposes these conditions and seeks to be emancipatory. Drawing interpretive and critical research together, social constructions such as language, consciousness and shared meanings, and constraints such as political, social and cultural highlight the complexity of knowledge management, therefore critical research was useful to compare and contrast the ability to achieve an environment appropriate to knowledge management. It was recognised that this critical element would be important because it distinguishes this research from other work, in that it is not prescriptive, attempting to find categorical and rational answers. As Ulrich (2003, p325) states “what does it mean to be rational when the ... value judgements ... of parties concerned differ? Whose rationality is rational?” In this respect Ulrich proposes a discursive approach because truth, facts and consensus are ideal concepts, and “while rationally defensible consensus is bound to remain an ideal, inter-subjectively compelling forms of critique are achievable” (Ulrich 2003, p 326).

Further, a critical discursive process is what distinguishes information exchange from knowledge sharing because the emphasis shifts from non-action or simple problem solving to “learning and solution questioning” (Ulrich 2003, p 326). Ulrich continues by pointing out that the questions asked should not be pre-defined by the problem or those who may ask the question, implying the importance of open and cross-organisational interaction incorporating diverse perspectives and complex relationships. However, Ulrich argues that discourse is undertaken in power based structural situations referred to as coercive situations. In order to bring about change and improvement, creativity and innovation, it is necessary to “equalise the balance of power in the system and get rid of the structures of domination” (Ulrich 2003, p329). Ridding an organisation of structures of domination brings with it further difficulties and may render this situation unsustainable because such a move toward equality and emancipation is resisted by hierarchical situations and meaningful mutual understanding and equality of power will not be achieved.

Ulrich, therefore, recognises the need to provide opportunities for broad discourse situations based on critical awareness and reflection and introduces a multiple sphere model of discourse in society. Figure 6.4.4, a multiple sphere model of discourse in an organisation has been adapted from Ulrich (2003, p331) and applied to an organisational setting to illustrate. It also helps to illustrate how this research is distinctive in the development and potential implementation of a framework to evaluate an organisation's readiness to engage with knowledge management reflecting a crucial perspective relating to critical discussion and cross organisational participation, with the recognition of power bases and influences. This perspective has not been addressed in the knowledge management literature (chapter 4) or review of frameworks (chapter 5).

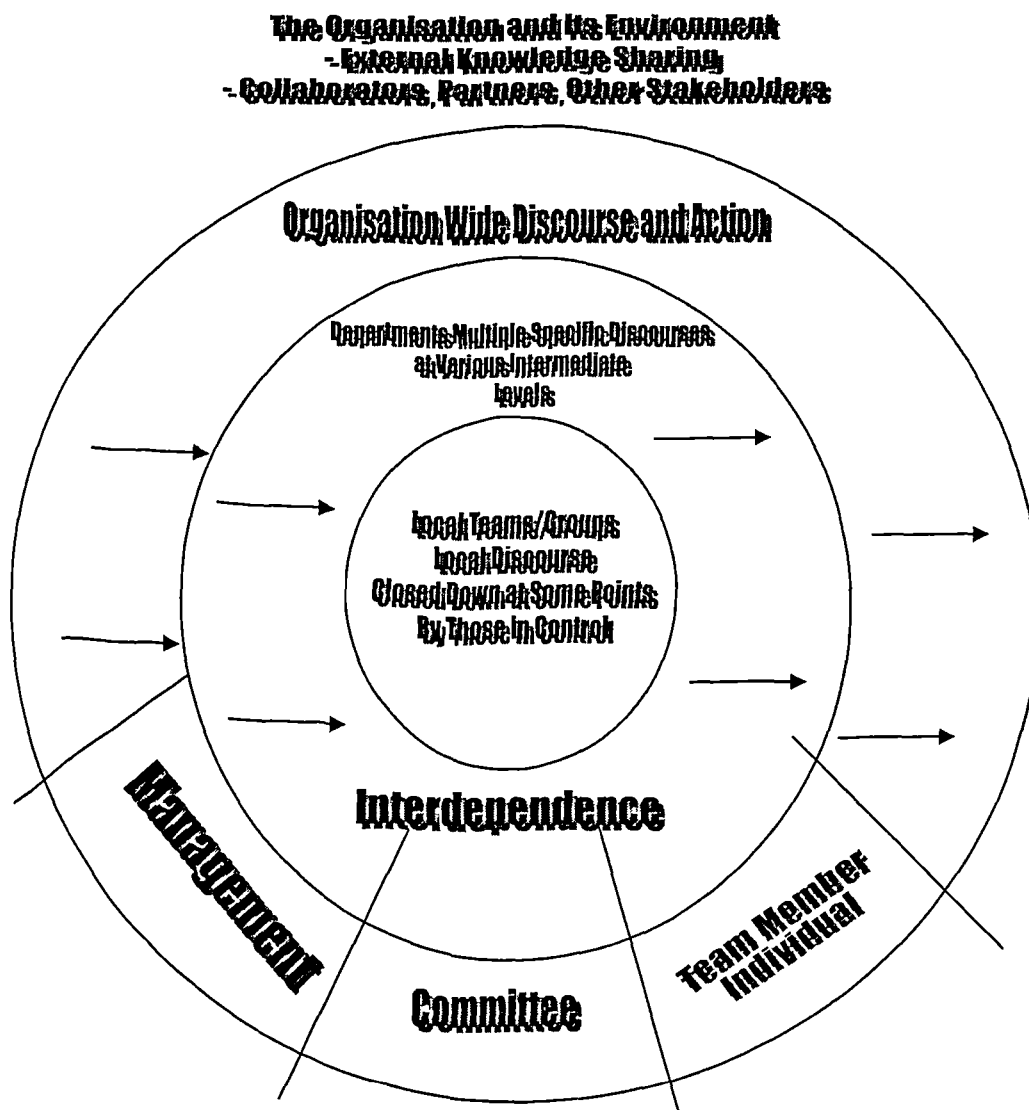


Figure 6.4.4: A Multiple Sphere Model of Discourse in an Organisation

Ulrich (2003) presents this model in the context of society at large and the politic administrative system. It has been adapted and used in this case because of the synergy with a university in the sense that it is a publicly funded organisation with a commercial slant. The model explicitly identifies different discourse situations which are presented in the context of intervention and evaluation in a university. This includes different levels of exposure that managers should be aware of to understand the environment that is to be

managed and their position in such an environment. Discourse runs from the centre of the model out with cross sections of influence and examples of domain specific influencers such as the manager, committee or team member/individual. Ulrich (2003, p331) highlights that “what happens at one level (output) may be the subject of discourse (input) at another level”. The relevance of this model relates to understanding the holistic approach to evaluation of a university’s readiness to engage with knowledge management and the relevance of taking a systemic approach.

To summarise, the foregoing identifies that whilst the framework for the evaluation of a university’s readiness to engage with knowledge management has been developed through a development, critique, improvement cycle, broadly based on Soft Systems Methodology, in terms of implementation and the actual evaluation, a critical approach is also necessary. An evaluation matrix was introduced in 6.3. But this is intended to guide the actual questions to be asked in the context of knowledge management, which does not necessarily evaluate the organisation’s readiness from this critical perspective.

The critical dimension is important because it distinguishes this research from other work, in that it is not prescriptive, attempting to find categorical and rational answers. Drawing on Ulrich (2003) a discursive approach that exposes critique is more achievable than truth and facts and such an approach requires open and cross-organisational interaction incorporating diverse perspectives and complex relationships. Although it has been recognised here that a critical evaluation is necessary, discussion thus far does not yet identify how the evaluation matrix is to be applied, therefore this process is discussed in detail next in section 6.5.

6.5 A Process to Enable the Application of the Framework for Critical Self Evaluation of an Organisation

In keeping with the systems paradigm, the framework and process of evaluation is underpinned by Checkland's (1981) Soft Systems Methodology, and reflects a social planning approach in an organisational context. Drawing on Ulrich (2003) the evaluation technique should be designed for critical reflection allowing for those who would be undertaking an organisational evaluation to critically reflect during the process of evaluation and in essence the framework and approach proposed should provide a tool to guide this process. The primary purpose is to evaluate whether the organisation regards itself as ready to engage with knowledge management considered from the organisation's point of view and those upon whom knowledge management might impact.

In applying the process for critical reflection, again Ulrich (1994) has been drawn upon and applied to Skyrme and Amidon's (1997) six questions of investigation. The evaluation matrix is based on the need to be able to ask the right questions to identify what currently happens, and explore with the organisation what ought to happen to engage successfully with knowledge management, whilst bearing in mind the need for appropriate participation in recognition the multiple sphere of discourse.

Ulrich (1994) points to specific issues to be considered which are discussed and applied to this framework and process of evaluation:

The first issue is purposefulness, which in this case is the formal design of the overall framework and assessment criteria used for intervention, based on Skyrme and Amidon's six questions of investigation. Ulrich (1983, p335) explicitly states that in applying a criterion "requires for each assessment question both an "is" and an "ought" question". However, just be using an "ought to" happen question may result in individual responses that are influenced by history and personal social conditioning, for example, if an individual has a mindset that indicates this is the way things have always been done, or what they personally think ought to happen, then the ought to happen scenario is likely to

be constrained by the individual focussing on their own agenda. But if the question is what is important to the organisation, then the response is likely to become more holistic, i.e. about the organisation, and personal agendas may be easier to expose. In applying this criterion, therefore the distinction between what currently happens in the organisation reflects the “is” scenario and what is considered to be important to the organisation reflects the “ought” to happen. By guiding the organisation to question what happens will assist in the explicit recognition of current “knowledge management” practices that may already be operational in an informal and ad hoc way, as well as identifying possible obstructions or areas for improvement and development. This will be achieved by juxtaposing the difference between where the organisation is on to what they consider to be important. This approach is imperative because it is more likely to drive the organisation to identify the issues and it forces active choice via empowerment of critical self reflection. The organisation has the power to choose to either act or to exclude or defer the issues that are surfaced in a transparent way.

The second issue relates to people within the organisation. Ulrich (1983, p335) states that “only human individuals are self reflective and autonomous ... it is clear that purposeful systems are made up of groups of purposeful individuals who are united by the convergence or interdependence of some of their purposes, though their interests may otherwise conflict”. This brings into play the concept of Checkland’s (1993) social systems analysis and the need to consider roles, norms and values when undertaking a full analysis of the organisation, in addition to the idea that different levels of staff have some level of interdependence, but different perspectives, therefore the importance of flexibility in applying the framework and process of evaluation should be maintained. It is anticipated that this framework has the ability to achieve this flexibility.

The third issue, as Ulrich (1994) points out is that social systems design is not a mechanistic design according to a functional criterion, and it is not a design *of* a social system, but a design *for* a social system which can be used in a critical sense. This framework and process of evaluation represents a design *for* an organisation which

requires a process of critical self reflection. Continuing with Ulrich there are three dimensions to an intervention such as this:

1. Inquiry. Does this framework and process of evaluation produce meaningful knowledge in respect of its purpose? The purpose of the framework is to evaluate the organisation's readiness to engage with the concept of knowledge management. The process of assessment identifies what is currently happening in this context and the level of importance placed on the specific Domain or element. Based on the results, therefore, it is anticipated that meaningful knowledge about the organisation will be gained in order for decisions to be taken about possible future improvement and action.
2. Does the framework and process of evaluation result in appropriate action? In this case the resultant action will remain the responsibility of the organisation according to weaknesses or obstructions they have identified in respect of their engagement with knowledge management. The process of evaluation facilitates this course of action, it does not however recommend a specific course of action, but acts as a guide for an iterative cycle of learning and improvement based on continual development and increasing understanding of knowledge management by those who participate, providing the ability to reach a position of consideration for a desirable and/or feasible way forward.
3. Does the framework and process of evaluation have the capacity to judge and modify its normative content? The evaluation will be undertaken by the individuals within the organisation, for the organisation and as such is intended to have the ability to flex and adapt according to specifics identified by the evaluators without altering the architecture or overall design, therefore the fitness for purpose should be maintained in this dimension.

The foregoing discussion adds to the robustness and theoretical underpinning of this framework and process of evaluation. The next stage is to test this in practice. For convenience, the evaluation matrix is summarised in table 6.5.1:

Table 6.5.1 Summary of Evaluation Matrix

	Know How	Know Who	Know Why	Know That	Know When	Know Where
Definition of knowledge management						
Management						
Strategy						
Internal Environment						
External Environment						
People						
Processes						
Activities						

The matrix comprises three main components:

1. The Domains and Elements
2. The questions
3. The distinction between what currently happens and what ought to happen

The Domains are based on discussions in previous chapters and form the main structure of the framework. The elements within provide the focus for exploration into specific areas if required by the organisation.

Skyrme and Amidon's (1997) six questions of investigation are used to explore each Domain at a high level in the first instance. This process is undertaken by questioning the know how, know who, know why, know that, know when, and know where, of the different Domains. If a weakness is detected then the elements within the Domain offer the opportunity to delve further into the area in a structured way, revealing what aspect within the Domain requires improvement or development.

The method of 'scoring' the organisation's readiness requires further breakdown and careful phrasing of the questions according to each Domain. It requires the individual to enter a score from 1-4. For each Domain the definition of 1 will be the worst case scenario for knowledge management whilst 4 will represent the best case scenario. For example, if an individual considers the organisation to be weak in the awareness or understanding of who to contact to gather specific expertise, but regards this as being essential to a specific role, they may well score 1 for the current situation and 4 for level of importance. This gap will then have been identified by them and therefore exposed as an area that requires improvement if knowledge management is to be successful. This is the empowerment of critical self reflection and transfers ownership for the evaluation and any required improvement or action to the organisation rather than an external evaluator telling the organisation what should happen. The scores are then transferred to a diagram for analysis and presentation of the results.

It is expected that if an organisation requires expertise in specific areas, they will also regard this as being critical to the business. If a specific area is weak, but the organisation regards this as being important or critical, then this will require further exploration, which will be undertaken by drilling down into the elements to identify where improvements must be made. The organisation can have the opportunity at this stage to focus the exploration into certain Elements only, but for those that are excluded, justification should be sought because the Elements identified have been included as a result of research, peer review and justification confirming their importance. The framework is flexible enough to be used as an organisational, group/departmental, or individual exercise. In addition different levels in the hierarchy of an organisation can be the focus, whether senior management, operational management or the workforce generally. A 360 degree approach is recommended where staff and external stakeholders can assess direct management, peers and subordinates. It is for the organisation undergoing evaluation to choose the preferred approach. Testing of the use and application of the framework and evaluation matrix was undertaken with in the University of Glamorgan.

7. APPLICATION AND TESTING OF THE FRAMEWORK

7.1 Introduction

This section equates to phase four of the research design, illustrated in figure 7.1.1. The objective was to test the use of the framework and evaluation matrix, by requesting various staff to complete the assessment. Two key objectives to be met were:

1. Identify any improvements to the generic framework and evaluation matrix
2. Identify changes that might be made in the application of the matrix specific to the University of Glamorgan.

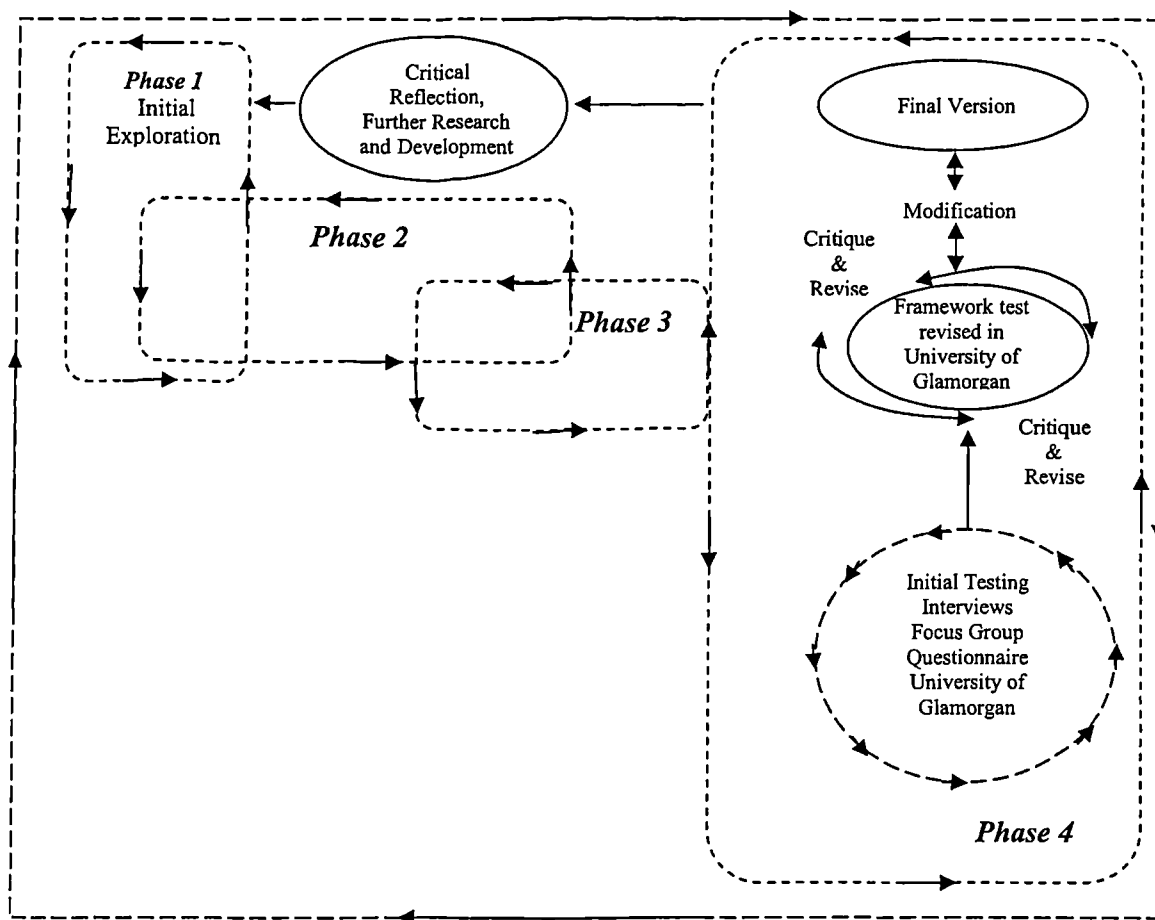


Figure 7.1.1 Research Design Phase Four (adapted from figure 2.2.1) – Application and Testing of the Framework

7.2 Approach Taken

The approach taken was twofold. The step one test was left open for the evaluator to find an autonomous way forward. By taking this approach it was intended to establish the types of changes that might emerge with the minimum of guidance, and how an organisation might choose to take the evaluation forward with no prescription. Comments and improvements to the framework were incorporated, afterwhich, an amended version was tested again by a different group of staff.

The outcome of step one delivered important and necessary preparation and learning before embarking on step two. This included the need for a definition of knowledge management to engender some level of understanding, and strict guidelines in completing the questionnaire to ensure that evaluators can complete the questionnaire independently. However, in terms of major changes to the Domains and Elements and structure of the generic framework, none were forthcoming, highlighting that this test coupled with previous critical review had now reached a reasonable point of saturation. In summary, the changes to the evaluation matrix from a generic perspective at this juncture included clarifying some of the questions, use of phraseology that conjure up images (i.e. use of the term workforce reflects a factory system, which should be replaced by use of the term staff), and amending the phraseology used for scoring to directly reflect the question being asked.

The primary learning from step 1 related more to the application of the matrix in the University, the most common criticism being the desire to categorise staff to achieve a balanced evaluation of the overall organisation, rather than taking an overview, or offering a cultural feel based on perceptions. The feeling was that if evaluating the organisation generally, different responses will emerge according to the category of staff being considered. Categories of staff are:

Administrative (APT&C)	Corporate
Academic	Manual
Directorate	Senior Management

In the application for the University of Glamorgan, the importance of establishing which category of staff was being evaluated to provide a balanced perspective of the overall organisation was fervently expressed. For example, Senior Management or Directorate may be expert in certain areas, whereas manual staff not so, but depending on the area being evaluated it may not be relevant for manual staff to be expert or vice versa. Whilst the opportunity to clarify certain scores is provided for through additional comments, evaluators found it difficult to give an overview of the entire workforce as it is so diverse, and in the process of considering each question a perspective of different categories of staff was emerging which could result in inconsistency and possibly skewed results, or a benign and neutral score. For example, when considering management one evaluator undertaking the evaluation initially focussed on Directorate, but when questions regarding the broader workforce were considered, the focus shifted to either manual or administrative staff, or the inclination was to point out that whilst administrative staff are likely to be poor in this area, academic staff are likely to be practitioners. This however confirms the flexibility of the process providing options when applying the evaluation to an organisation. For example, a second approach during phase one was to facilitate the request to state upfront which category of staff would be the focus of evaluation and all responses would relate to that category of staff only. This would mean that the matrix would have to be reproduced six times and customised to focus specifically on categories of staff which does not pose any major difficulty. Alternatively the categories of staff could be coded and the code entered onto the matrix to reflect the particular category of staff. For example staff could be coded as follows and entered into the evaluation matrix according to the evaluator's perception of their position according to the question being asked, as demonstrated in table 7.2.1:

Administrative (APT&C)	= AD	Corporate	= C
Academic	= A	Manual	= M
Directorate	= D	Senior Management	= SM

Table 7.2.1: Example of Categorising and Entering Scores onto Evaluation Matrix

Current Situation 1= aware but vague 2 = understands 3= practitioner 4 = expert				Importance to the organisation 1= not important or necessary, 2= important, 3= essential 4= critical			
1	2	3	4	1	2	3	4
AD C M			A D SM	M	AD	C	A D SM

To overcome the ambiguity and confusion that may arise as suggested in phase one, individuals or groups who are participating in an evaluation can therefore state the focus of the evaluation up front, i.e. an evaluation of Directorate, Senior Management, APT&C staff, and so on, from which generic results can then be presented through the analysis, and categories of staff can be identified as requiring improvement in certain areas.

Whether categories of staff are explicitly stated in this way or a generic overview of the organisation is undertaken, participation must be cross organisational and/or 360 degree to meet the requirements of triangulation. For example, as discussed in chapter one, social research of this nature is high in subjectivity and given the author's involvement as a participant observer, it was essential to remain aware and where possible strive to achieve some level of objectivity and reliability of the research overall and in an organisational context. Triangulation provides a recognised and useful approach to reduce ambiguity and increase reliability, for example by a multi method approach, of which the testing of the framework forms one part. Previous discussion about the overall research design in chapter two emphasised the importance of triangulation for this entire piece of research and in keeping with a recursive approach, this is repeated again at this

level. Denzin 1978 (in Decrop, 1999, pp158-164), identifies four different methods of triangulation:

- data triangulation, which involves the use of information, derived from literature sources and fieldwork;
- method triangulation which is the use of multiple methods to solve a single problem;
- investigator triangulation, which requires several different researchers to interpret the same data thus avoiding personal bias, or alternatively, the use of an external auditor to review information and confirm its validity;
- theoretical triangulation, which is a multi-perspective such as anthropology, psychology, sociology etc to interpret the same data.

This approach to testing of the framework meets the requirements of triangulation, incorporating Denzin's (1978) method, investigator and data triangulation. The requirements of method triangulation were met at the development stage through primary and secondary research and fieldwork conducted in the University of Luton, external consultants, peer review as indicated previously, progressing to this stage of application and testing the conceptual framework in the University of Glamorgan.

Investigator triangulation included secondary research such as the University of Luton MORI Survey (Wisdom and Kingdom 1999) and a communication survey conducted by Bell Pottinger (1999), in addition to the use of external collaborators ensuring the feasibility of the conceptual framework. At this test stage the process within which the actual testing of the framework is undertaken requires several different evaluators to interpret and comment on the same approach in action, thus avoiding personal bias.

Data triangulation included literature and fieldwork based on the University of Luton as a case study and included the author's own surveys conducted within the University of Luton such as Health and Wellbeing survey (Jack 1999), change management focus group (Jack 1999), collaboration with other organisations, peer review and input from consultants all in the development of the framework. The actual full application in a

university setting, utilising a “final” framework includes information derived through organisational research and this is illustrated in figure 7.2.2:

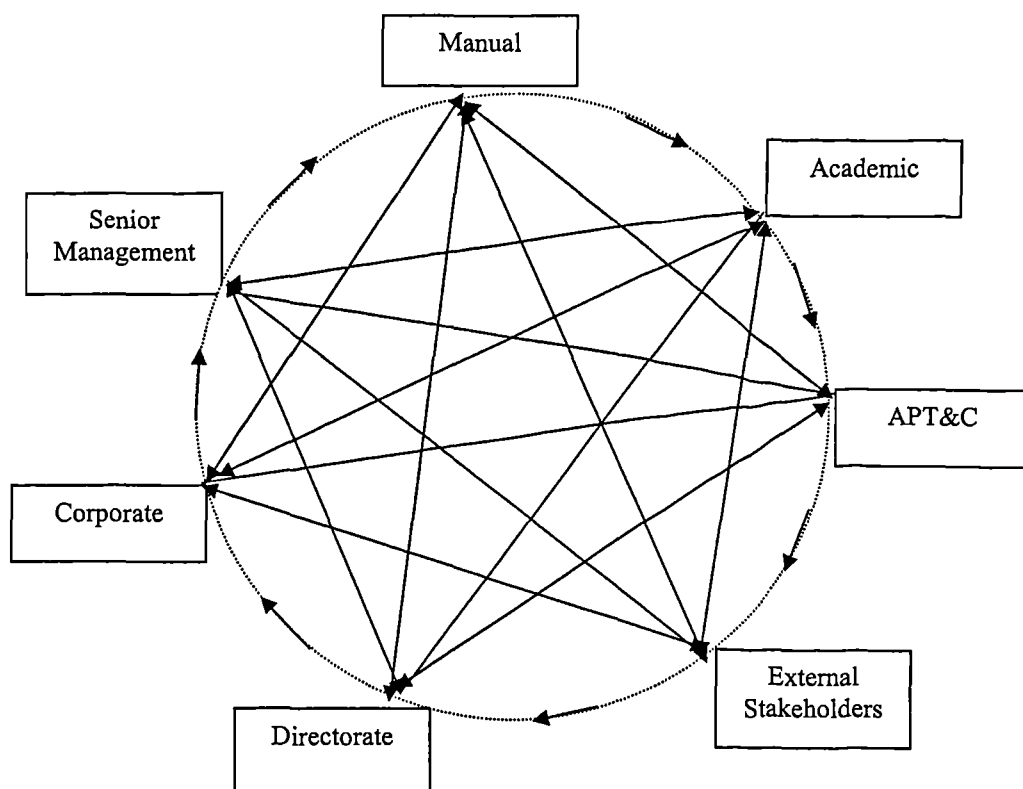


Figure 7.2.2 Triangulated approach in application of Knowledge Management Framework

Figure 7.2.2 explicitly demonstrates how the evaluation can be undertaken throughout the organisation from any perspective which provides a robust and rounded view of the organisation's ability to engage with knowledge management. The arrows identify the cyclical approach to an organisational evaluation where different categories of staff can evaluate each other. If an overview is undertaken without categorising staff, then for balanced participation, the analyst would be required to ensure representation from each category to offer a broad overview. For purposes of this pilot test, APT&C, Corporate and Senior Management categories of staff participated during step two.

In terms of the concept of knowledge management more broadly speaking, the feedback from the initial step one test and critical review also emphasised the social conditioning into organisational hierarchy. For example, the evaluators who completed phase one were very focussed on hierarchy and position rather than viewing the organisation in a broad lateral systemic way, which could also indicate to some extent the misperception of what knowledge management represents, i.e. a cross organisational (both horizontal and vertical) concept. This then leads to a consideration that in order for the organisation to self evaluate they may first need to be educated about knowledge management and the importance of the definition for the organisation is emphasised. However, even with an overview and explanation of knowledge management, it is difficult for an individual to sustain a level of understanding without returning to the constraints, power and politics of the hierarchical structure.

Despite statements about confidentiality and anonymity, the evaluators appeared fairly guarded in their responses and to some extent tended to want to divert the exercise to suit their own agendas. They provided a protectionist response making statements such as “staff in their areas do this anyway” and either focussing on or avoiding scoring certain categories of staff in particular Directorate or Senior Management. This brings to bear the importance of considering Checkland’s (1981) Social Systems Analysis in the context of the ethos of evaluation, and consideration of roles relating to the position in the organisation, relationships with others, and job content. From this evidence and observation, it is recommended that the user of Soft Systems Methodology should conduct a Social Systems Analysis after every interview, conversation or review of related documentation and phase one confirmed that an awareness of this issue is maintained during analysis. In addition, Checkland’s Political Systems Analysis considers how power is obtained and disposed, and how that power is utilised in relationships between different interest groups. The political dimension is unavoidable in any human situation as individual perspectives, agendas, interests and positions of power will influence every aspect of a social type investigation and balance between these elements is important.

Finally, in step one, the comment was made that the questionnaire seemed long and quite repetitive resulting in a loss of interest, particularly so in the People Domain and Communication Activities Domain. The view was that really the essence of the entire matrix appeared to be about people and communication and the comment was made that it might be more appropriate to omit the People Domain and list the actual different initiatives or communication activities and request the evaluator to identify what currently takes place and then perhaps list in order of priority the most effective for knowledge management. For example, does the organisation undertake specific communication activities? This, however, remains specific to the organisation and would be better initiated at the second stage of evaluation when drilling down into the elements, whereas the generic questions about communication relate more to the overall culture and ability of the organisation rather than the activities that underpin this. Based on previous research and subsequent testing of the evaluation matrix, the broader view was that the People and Communication Activities Domains are generically relevant, because the questions represent different contexts, and when considering the elements within each Domain, different analysis and results may emerge, which would otherwise be lost.

Having made the changes and taking on board the learning achieved from step one of the testing, step two was embarked upon with a focus group comprising Senior Management, Corporate and APT&C staff, none of whom were involved in step one.

This group were presented with a broad definition of knowledge management and guidelines to complete the questionnaire, which included the fundamental 'rule' to maintain an overview of the organisation rather than considering categories of staff, and in doing so it was their feel for how the university generally functions in the context of knowledge management. The focus group did not experience any difficulties in completing the questionnaire from a process perspective, but did comment on the challenge to maintain a broad overview stating that it required a depth of reflection that they had never given time to before. There was a general consensus that the more prior knowledge they had about the broader organisation, the more intense and challenging the task was. For example the staff (irrespective of position) who have a fairly focussed role

and no experience across the organisation offered an overview from a base of limited boundaries and knowledge, whereas the staff with more knowledge and experience across the organisation, perhaps have held several roles in different departments, could offer a broader view. The more experienced staff felt the need to categorise staff given the diversity of their experience, whereas the staff with less cross organisational experience did not find this to be an issue.

Overall the focus group felt that the generic framework was robust and capable of flexing to meet specific intervention requirements in most organisations. General comments made follow:

There are a lot of things in this that you do think about but they are never made clear in an action oriented way. There are opportunities to lay the foundation for knowledge management through the university induction, departmental induction, which improve knowledge about the university. Induction, though should be spread throughout the first year because as knowledge improves the context changes and how you would use the knowledge then changes. It is a longer process than it is given time for. Induction sets the context of the role and development of the individual.

I found it difficult to maintain a very broad overview, therefore feel that some answers are diluted and question the value of my responses. I would prefer to assess categories of staff that I know because I don't know what I don't know. Categories of staff function on a daily basis in different ways.

Generally I found the questionnaire fairly good to complete, raising issues that should be made more explicit. It shows staff perceptions of how things work, but don't actually exist.

When picturing groups of staff, it is difficult to break away from categorisation. Without categorisation it pushes scores to an average rather than an accurate position. This is more apparent when considering the current with level of importance.

It feels easier not to think too long and hard with these questions, but rely on the first response and move on.

The more you seem to know about the university, the more difficult it is to disentangle your thoughts to answer from a birds eye view.

The questionnaire is very wide making you think outside the box.

Table 7.2.1 summarises specific comments that emerged during each question and distinguishes between the critique received about the generic framework and adaptations and/or comments that were suggested in relation to application in the University of Glamorgan. In keeping with the concept of internal and external critique the responses of the author to this feedback are also provided. The author's responses are intended to focus on the development and improvement of the framework, rather than any real evaluation of the organisation. The reason for this is that it is the framework and process of evaluation that is being tested to establish its fitness for purpose. To fairly evaluate the organisation would require a broader and increased number of staff involved to reach a fair balance and overview of the organisation.

Table 7.2.2: Summary of critical review and reflection/responses from phases 1 and 2 of testing - University of Glamorgan

Domain	Comments about Generic framework	Comments in context of application of Framework to University of Glamorgan	Critical reflection/response
<p>Management KNOW HOW</p> <p>A. How well does management know how to get things done through formal procedures?</p> <p>B. How well does management know how to get things done through the experience and tacit knowledge of others?</p> <p>C. How well does management know how to get things done through their own knowledge as a team?</p>		<ul style="list-style-type: none"> I have taken a senior management view of Directorate here. The results could be different at different levels. Directorate may not be as good as some senior managers The closer you get to the top the more know how breaks down. People lower down the hierarchy need to work together whereas Directorate tend to do their own thing. Management only seem to be as good as they are depending on the support staff around them. 	Three organisational specific comments were made, with no change required to the questionnaire.
<p>Management KNOW WHO</p> <p>A. To what extent does management know who to network with internally to address a specific problem, issue, idea etc?</p> <p>B. To what extent does management know who to network with externally to address a specific problem, issue, idea etc?</p>		<ul style="list-style-type: none"> An awareness of external contacts requires more knowledge at the top Important but management rely on subordinates to have that information 	Two organisational specific comments were made, with no change required to the questionnaire.
<p>Management KNOW WHY</p> <p>To what extent does management know why knowledge management is relevant to the purpose, mission, and vision strategic direction?</p>	Phase one - Change IS to MAY BE		Not accepted and no change made. By stating that knowledge management may be relevant to the purpose etc, reduces the level of importance placed on the concept, which is the essence of what is being explored over and above all else. Previous research clearly identifies that knowledge management is relevant, not may be relevant.

Management KNOW THAT To what extent does management know that the strategic direction of the organisation is conducive to knowledge management?	Phase one - This question is confusing. How can the strategic direction be conducive to knowledge management. Conducive may not be the right term. Perhaps the question should be turned on its head. Does management know that knowledge management is important to strategic direction or does management know that knowledge management should be part of the strategic vision?	Essential with other things	Accepted and changed accordingly for phase two testing to: To what extent does management know that knowledge management is conducive to the strategic direction of the organisation?
Management KNOW WHEN To what extent does management know when to maximise on the potential opportunities that may arise from new knowledge?		<ul style="list-style-type: none"> • Management would need to understand the subject of knowledge management before benefiting from it • If it fits with their agenda then this would score fairly well, but if not on their agenda then there is no interest and opportunities are lost. • Knowledge about skill gaps, nationally and within the Welsh economy, seem not to materialise in relevant degree areas. 	Although the first comment is specifically made about management, this raises an issue about the level of understanding that may be required about knowledge management before an organisation can critically self evaluate. Hence the need for an initial broad definition in the first stage of an assessment from which the process of self evaluation can engender further understanding and learning before exploring specific elements at which point an organisation can develop a specific definition for them, and place them in a position to evaluate against that definition.
Management KNOW WHERE To what extent does management know where to gain new knowledge in order to maximise on new opportunities?		Depends on the manager. Some are happy to plod along with knowledge they already have.	No change required to the questionnaire.
Strategy KNOW HOW To what extent do formal policies and procedures contain the Know How to implement strategy (i.e. meet the objectives)?	This question is confusing clarify by inserting DOCUMENTED formal policies and procedures. Scoring categories do not reflect question. These should be rephrased. 1= does not exist, 2= Ambiguous, 3=Clear, 4= Explicitly Clear	APT&C staff do not really have much access and do not influence anything	Accepted and changed accordingly for phase two testing to: To what extent do documented formal policies and procedures contain the Know How to implement strategy (i.e. meet the objectives) Scoring categories rephrased
Strategy KNOW WHO To what extent does the strategy enable staff to know who to contact to help them implement strategy across the organisation?	Scoring categories do not reflect question. These should be rephrased. 1= does not exist, 2= Ambiguous, 3=Clear, 4= Explicitly Clear		Accepted and changed accordingly for phase two testing.

<p>Strategy KNOW WHY To what extent do staff know why the strategy is progressing the organisation in a specific direction?</p>	<p>Scoring categories do not reflect question. These should be rephrased. 1= do not know, 2= Some knowledge, 3=Aware, 4= Fully knowledgeable</p>	<p>It is difficult to consider the staff overall. Categorising staff would be more focussed and beneficial.</p>	<p>The comment about scoring categories accepted and changed accordingly for phase two testing.</p> <p>The comment about categorisation of staff recognised and appreciated, but only in context of application to organisation if the organisation chooses to undertake an evaluation following a generic overview. In the initial stages, an overview will assist in prioritising Domains of weakness which can subsequently be evaluated and staff categorised at the element stage. This may be more time effective and efficient avoiding unnecessary exploration.</p>
<p>Strategy KNOW THAT To what extent do staff know that the strategy requires cross organisational team working?</p>	<p>Scoring categories do not reflect question. These should be rephrased. 1= do not know, 2= Some knowledge, 3=Aware, 4= Fully knowledgeable</p>		<p>Accepted and changed accordingly for phase two testing.</p>
<p>Strategy KNOW WHEN Do staff know when objectives within the strategy should be met?</p>	<p>Scoring categories do not reflect question. These should be rephrased. 1= do not know, 2= Some knowledge, 3=Aware, 4= Fully knowledgeable</p>		<p>Accepted and changed accordingly for phase two testing.</p>
<p>Strategy KNOW WHERE Do staff know where to locate the organisational strategy?</p>	<p>Scoring categories do not reflect question. These should be rephrased. 1= do not know, 2= Some knowledge, 3=Aware, 4= Fully knowledgeable</p>		<p>Accepted and changed accordingly for phase two testing.</p>

Internal Environment KNOW HOW A. Do staff know how to effectively share experience and tacit knowledge? B. Do staff know how to share hard Information?		<ul style="list-style-type: none"> For some staff this is not necessary. It depends on the context and the role. It may be more important for academic staff than support staff. Knowing is one thing, actually putting into practice is another. Doesn't really happen. 	No change required to the questionnaire.
Internal Environment KNOW WHO A. Do staff know who to network or interact with informally? B. Do staff know who to interact with in a formal manner?		Again this depends on the level of staff and context, whether academic or support	No change required to the questionnaire.
Internal Environment KNOW WHY Do staff know why their roles, contributions and experience are important to the organisational strategy?		The appraisal process should clarify this. Depends on who you ask	No change required to the questionnaire.
Internal Environment KNOW THAT Do staff know that the technology (software) should be understandable and user friendly to the staff base?		<ul style="list-style-type: none"> Sometimes IT staff seem to make it difficult so that staff don't understand and have to refer back to their expertise. IT staff probably understand users need to understand, but struggle to empathise and make it happen in many cases 	No change required to the questionnaire.
Internal Environment KNOW WHERE A. Do staff know where they can meet informally for discussion and exchange of ideas? B. Do staff know where to locate hard based information (i.e. central point)?		<ul style="list-style-type: none"> Staff tend to meet in catering outlets or office tea rooms The scores reflect academic and APTC staff, whereas manual workers do not know. For staff that are not at a management type level, importance would be 2, because it is manager's responsibility to cascade the information down. 	No change required to the questionnaire.

		<ul style="list-style-type: none"> • Informal meetings can happen anywhere, and they will happen anyway irrespective. This is important, but not essential or critical. • If specific to job yes, if it relates to broader issues then no. • Know where, but time to do is always a problem 	
<p>External Environment KNOW HOW Do key players know how to take action in the external environment:</p> <ul style="list-style-type: none"> a. Locally b. Regionally c. Globally 		These scores exclude Directorate	No change required to the questionnaire.
<p>External Environment KNOW WHO Do staff know who coordinates external contacts and networks to avoid duplication of effort and ensure an efficient approach?</p>		For example no coordinated approach to employer liaison across all the university departments	No change required to the questionnaire.

External Environment KNOW WHY Do staff know why the external environment impacts on the strategic direction of the organisation?		These scores are based on the perception that it is about those who need to know	
External Environment KNOW THAT Do staff know that the external environment is used to benchmark internal training, experience and intellectual capability?		<ul style="list-style-type: none"> This is not put into practice for various reasons relating to time, consent and generally the organisation often don't realise capability of own intellectual base. This should happen but it doesn't 	No change required to the questionnaire.
External Environment KNOW WHEN Do staff know when to take action to improve competitive position relative to the external environment?		I would make a distinction here between academic and support staff. Academic staff would tend to score high in my opinion.	No change required to the questionnaire.
External Environment KNOW WHERE Do staff know where to locate external information that will advance the competitive position?		This score refers to academics only	No change required to the questionnaire.
People KNOW HOW A. Does the broader staff base know how to get things done through formal procedures,	<ul style="list-style-type: none"> Who is the general workforce? Academic or support? General workforce seems to reflect factory type situation and not a higher education institution. 	In the scoring here A in the grid = academic and S = support	<p>The comment about use of the term workforce accepted and terminology changed to broader staff base for phase two</p> <p>The comment about the question having had already been</p>

manuals etc B. Does the broader staff base know how to get things done through the experience and tacit knowledge of others?	<ul style="list-style-type: none"> This question has already been dealt with 		dealt with relates to one respondent who categorised staff up front by distinguishing between academics and support. Although this implies repetition, no change was made because the elements underpinning will result in a different analysis and context.
People KNOW WHO Do staff know who does what according to roles?	This question should be rephrased. Subject area immediately leads to academic.	In the scoring here A in the grid = academic and S = support	Comment about rephrasing of question accepted and changed for phase two to: Do staff know who does what according to roles beyond job titles.
People KNOW WHY Do staff know why their role and contribution to the organisational strategy and vision is important?	Because of the way the questions have been answered, this has already been dealt with	Opportunity in appraisal to be more explicit but doesn't always happen, e.g. the who, why where is the issue going, and feedback.	The comment about the question having had already been dealt with relates to one respondent who categorised staff up front by distinguishing between academics and support. Although this implies repetition, no change was made because the elements underpinning will result in a different analysis and context.
People KNOW THAT Do staff know that their progressive education, experience and training is important to knowledge management?		<ul style="list-style-type: none"> This is from a support staff perspective This is becoming essential as time goes on 	No change required to the questionnaire.
People KNOW WHEN Does the workforce know when to take action to implement strategy?		<ul style="list-style-type: none"> This is relevant to those that should know, not the broader staff base Because of the way the questions have been answered, this has already been dealt with Should know by the direction given by management. Some individuals seem to hold on to knowledge i.e. I know something you don't Yes, but not if asked this question directly 	No change required to the questionnaire.
People KNOW WHERE Does the workforce know where to locate information needed though the use of IT or paper based functions?		Because of the way the questions have been answered, this has already been dealt with	The comment about the question having had already been dealt with relates to one respondent who categorised staff up front by distinguishing between academics and support. Although this implies repetition, no change was made because the elements underpinning will result in a different analysis and context.

Processes Policies, procedures KNOW HOW Do staff know how to use discretion and judgement to contextualise business processes?	Business Processes should be clarified further by defining them as policies, procedures.	Depends on the process, policy, procedure. In some cases it is not possible to use discretion and the procedure has to be followed exactly.	Comment accepted and changed for phase two to Do staff know how to use discretion and judgement to contextualise organisational processes policies and procedures.
Processes KNOW THAT Do staff know that business processes underpin the strategic direction of the organisation?		This is ambiguous for the majority of staff. It depends on individual roles and the need to know, e.g. if a problem arose. It is not a transparent part of the university business process. Everyone does not have to know everything but should be aware of someone who does know	As above
Processes KNOW WHEN Do processes policies and procedures identify the know when to take action where relevant?		Struggling with question. Various policies, procedures and some identify action, whereas others do not	Although the comment was made that the evaluator was struggling with the question, this is taken not to be a problem with the question, but a problem with answering in the context of the organisation and diversity of policies, procedures.
Communication Activities KNOW HOW Do staff know how to engage with various informal communication activities to share knowledge and experience?	The questionnaire is quite repetitive and tends to have a significant focus on communication. Communication activities might be better listed here with a request to identify which of the activities currently take place and a prioritisation of those that may be considered to be effective and important to the University.		This comment is recognised as being relevant to further exploration in relation to the elements and activities that underpin the Domain specific to the organisation and not the generic framework
Communication Activities KNOW WHY Do staff know why cross organisational communication activities are relevant to the purpose, strategy, direction?		Awareness and understanding is improving, especially the more a broader view of the organisation is made clear, which relates back to people sharing.	No change required to questionnaire.

<p>Communication Activities KNOW WHEN Do staff know when to initiate specific and timely communication activities for effective action?</p>		<p>Staff know when to do this when it impacts on them, generally taking a reactive approach.</p>	<p>No change required to questionnaire.</p>
<p>Communication Activities KNOW WHERE Do staff know where to congregate to engage in informal communication activities?</p>		<p>There is no where I would consider to be conducive to this.</p>	<p>No change required to questionnaire.</p>

In summary, the process to enable the application of the framework for critical self evaluation is robust from a theoretical perspective meeting the requirements of intervention based on systems thinking. The evaluation process has been developed with a clear knowledge management investigative procedure based on Skyrme and Amidon's (1993) six questions of investigation. Drawing from Denzin (1978), triangulation to achieve a balanced approach has been maintained.

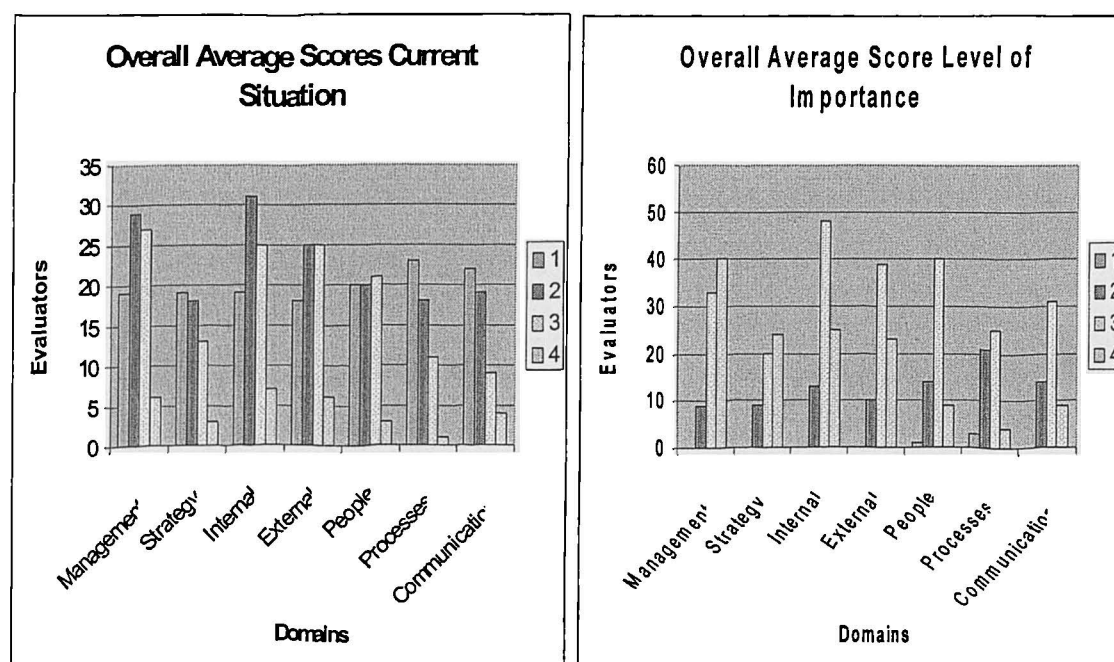
7.3 Results

Testing of the framework and evaluation matrix has resulted in specific changes to the process from an organisational perspective only, but no change to the Domains and Elements, confirming that development, based on previous research and empirical work, has reached an acceptable point of saturation. It is clear from the feedback, however, that an organisation may want to be more focussed than generic by categorising staff and adapting the framework to suit their specific needs and the framework and evaluation matrix is capable of flexing to meet such needs, without altering the structure. This may involve the addition of Elements to reflect specific activities, but if the organisation wishes to omit Elements or Domains, justification of this should be sought; otherwise significant gaps may appear in the final analysis.

Having taken into consideration the feedback received regarding the generic framework and process, this section now discusses the analysis of the University of Glamorgan and presents results that are intended to show the outcome of the application of the evaluation matrix, and to provide an indication of the university's readiness to engage with knowledge management. As this is a continuation of the testing of the framework at the application stage, it is not intended to be a comprehensive analysis of the university, but to establish that the framework is useable to a relevant conclusion. The following section expresses the results of the evaluation in graphical form using column graphs. The x axis at the bottom identifies the Domains within which the questions were asked. The y axis to the left shows the number of evaluators who identified the scoring in each Domain and the key to the right hand side displays the scores 1-4, one representing the worst case scenario and 4 the best case scenario. It should be noted that throughout where there is

no indication of a score, this raises a question in its own right as to why this may be the case, and presents a requirement for further analysis by exploring the Elements further. The left hand graph identifies the current situation and the right hand graph identifies the level of importance. For clarity and greater understanding, discussion about each graph is undertaken using percentages of responses.

Figure 7.3.3: Overall Average Scores

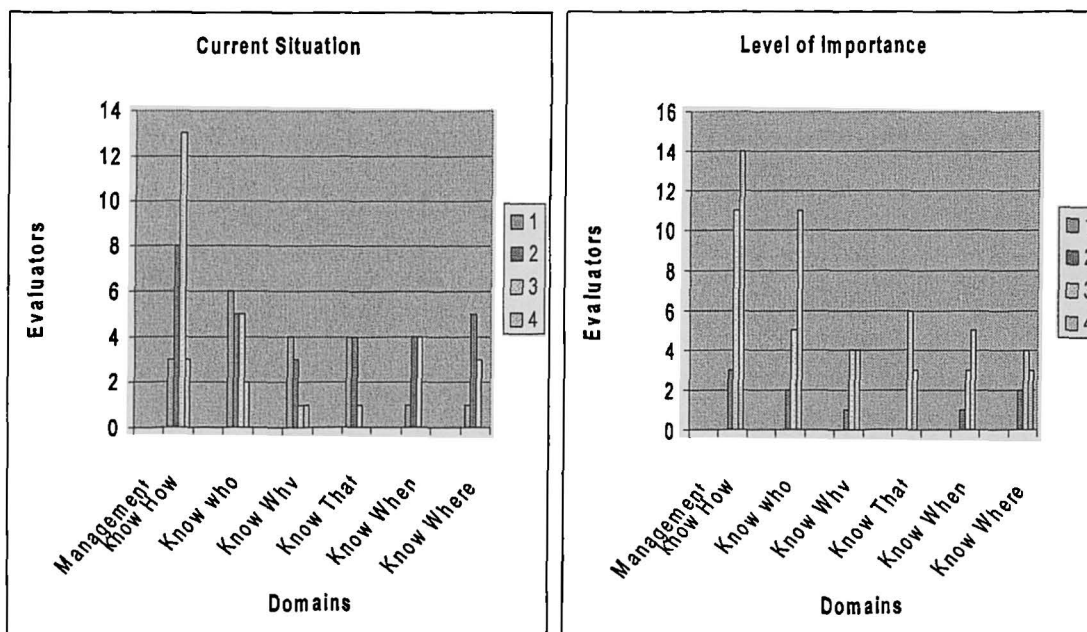


Overall the University of Glamorgan scores indicate that improvements could be made in relation to Knowledge Management Readiness with 53% scoring one, reflecting a vague unclear perception in the current situation. 35% may have an understanding with 5.9% at practitioner level and 5.5% at expert level. This is compared to the majority evaluators considering knowledge management to be in the region of essential/critical to the university at 60%. 22.3% feel it is important, 16.6% essential and 21.1% critical. Only 0.9% feel it is not important and not necessary. The Management and Internal Environment Domains are regarded by the evaluators as being the most essential/critical to the University. The level of importance that the evaluators have placed on each domain is listed in order of priority as follows:

Management	18.9%
Internal Environment	17.6%
External Environment	16.1%
Communication Activities	13.2%
People	12.7%
Strategy	11.4%
Processes	9.8%

Exploring the Domains further, the following graphs identify the overall scores for each Domain, with highlights identifying areas that may require improvement.

Figure 7.3.4 Management Scores



The overall results of Management indicate that the evaluators' perception of the current situation is that managers understand/practice at 44% and the level of importance of

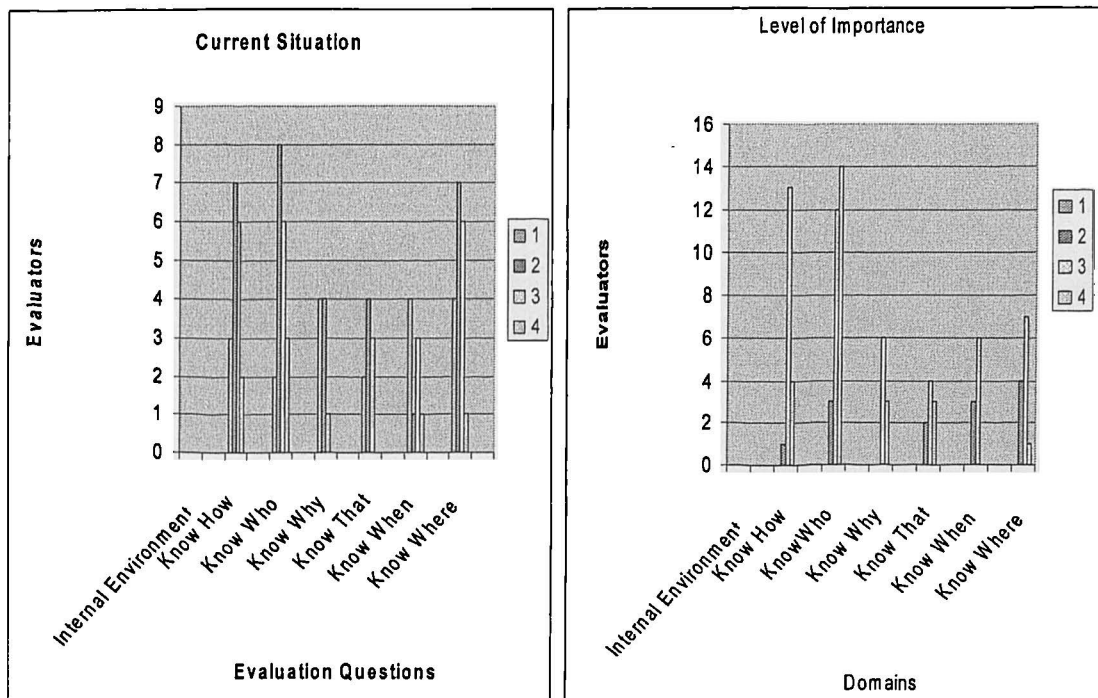
various aspects average out at 38% essential/critical to the university. The main strength is knowing how to get things done through formal procedures with 88.8% at practitioner/expert level and 88.8% is identified this as being essential/critical to the university. There are two areas of weakness. The first is knowing how to get things done through team knowledge. The evaluators' perception is that the team do not perform effectively with 33.3% indicating that the team is at practitioner/expert level and 100% identifying this as being essential/critical to the university. This points to the need to explore team work and cross management interaction further in the context of sharing experiences and knowledge. Such an approach to working practices cascades throughout the broader university and research indicates that with appropriate senior management commitment, positive culture change could be achieved.

The second area of weakness is knowing that knowledge management is conducive to the strategic direction of the university with 11% of evaluators identifying management at practitioner/expert level and 100% identifying this as being essential/critical to the university.

These areas could be explored further by drilling down to Elements such as:

- Commitment /Creating sense of purpose/mission statement
- Critical discursive opportunities
- Relationship Management
- Communication
- Training and development specific to knowledge management

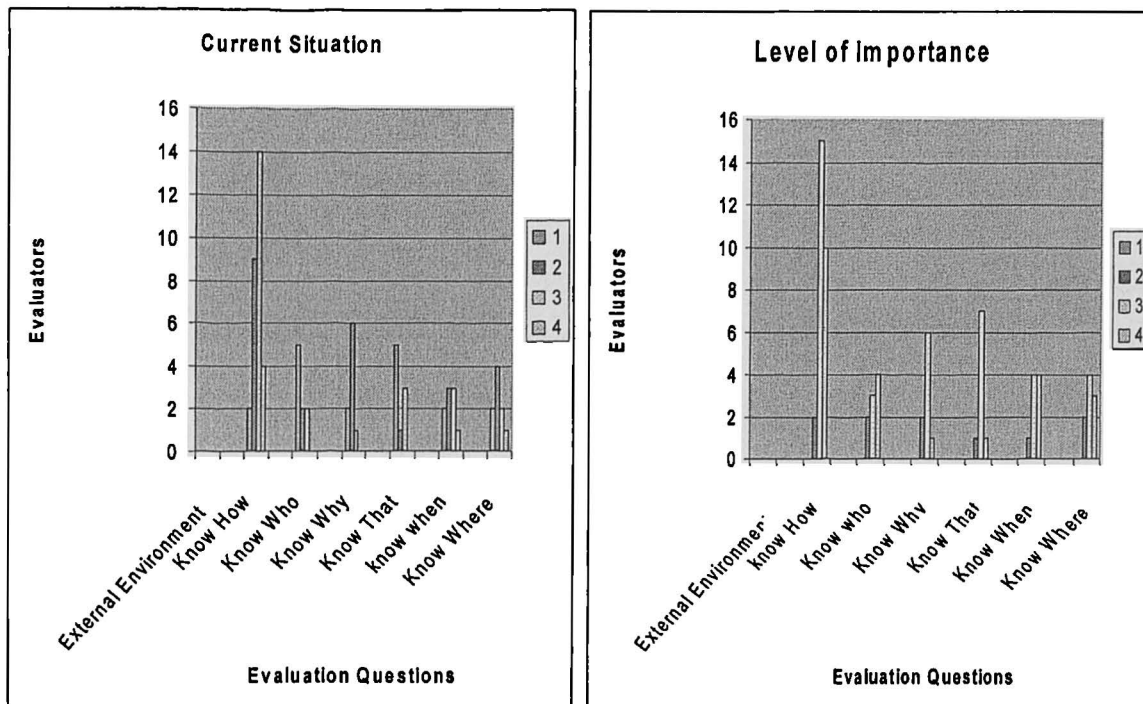
Figure 7.3.5 Internal Environment Scores



With regard to the internal environment domain, overall the scores are fairly spread, though the majority of evaluators feel that there is an awareness and understanding at 53% and 38% at practitioner/expert level. 86% of evaluators identify this domain as being essential/critical to the University. The two significant areas of weakness relate to know who to network or interact with informally with 55.5% of evaluators indicating that the university is aware but vague/understands and 100% identifying this as being essential/critical to the university. The facility to interact informally is an important requirement of knowledge management, therefore this could be explored further by focussing on the following Elements:

- Cyber Cafes
- Communal areas
- Social space

Figure 7.3.6 External Environment Scores

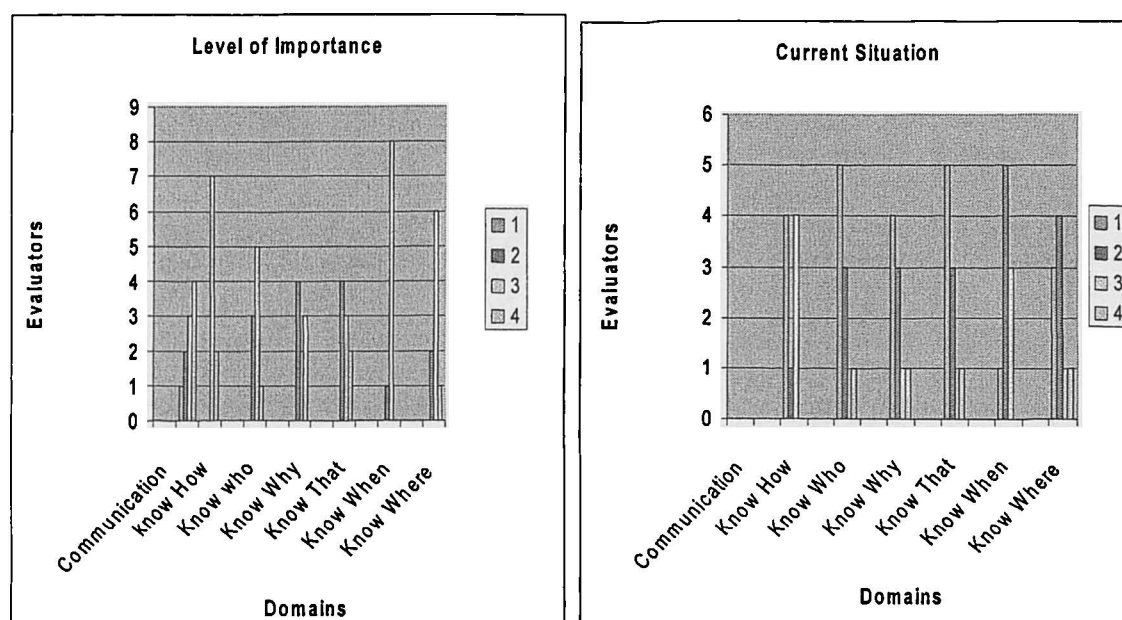


There is a similar trend in the external environment domain to that of the internal environment, with a fairly even spread of scores overall. 53.7% of evaluators indicate a current level of awareness/understanding, 31.2% at practitioner level and 46.2% at expert level. This is set against a level of importance the evaluators identify as 86% at essential/critical and 13.8% as important. Two areas emerge that may require further exploration and these are knowing how to take action in the global environment with 77.7% indicating an awareness/understanding and 77.7% identifying this as being essential/critical to the university. Knowing who coordinates external contacts and networks to avoid duplication of effort is the second area, with 77.7% aware/understand and 77.7% identifying this as being essential/critical to the university.

The Elements within this domain that could be considered are:

- External knowledge initiatives with -community groups, customers, other stakeholders
- Global issues- language dominant country cultures
- Diversification – consultancy, research & development

Figure 7.3.7 Communication Activities Scores



The Communication Activities Domain appears to score toward the weaker side of the scale in the current situation with 40.2% indicating aware but vague, 36% indicating an understanding, 16.6% at practitioner level and 6.9% at expert level. This compares to 55.5% at essential and 15.2% at critical levels of importance. Zero evaluators felt that this was not important.

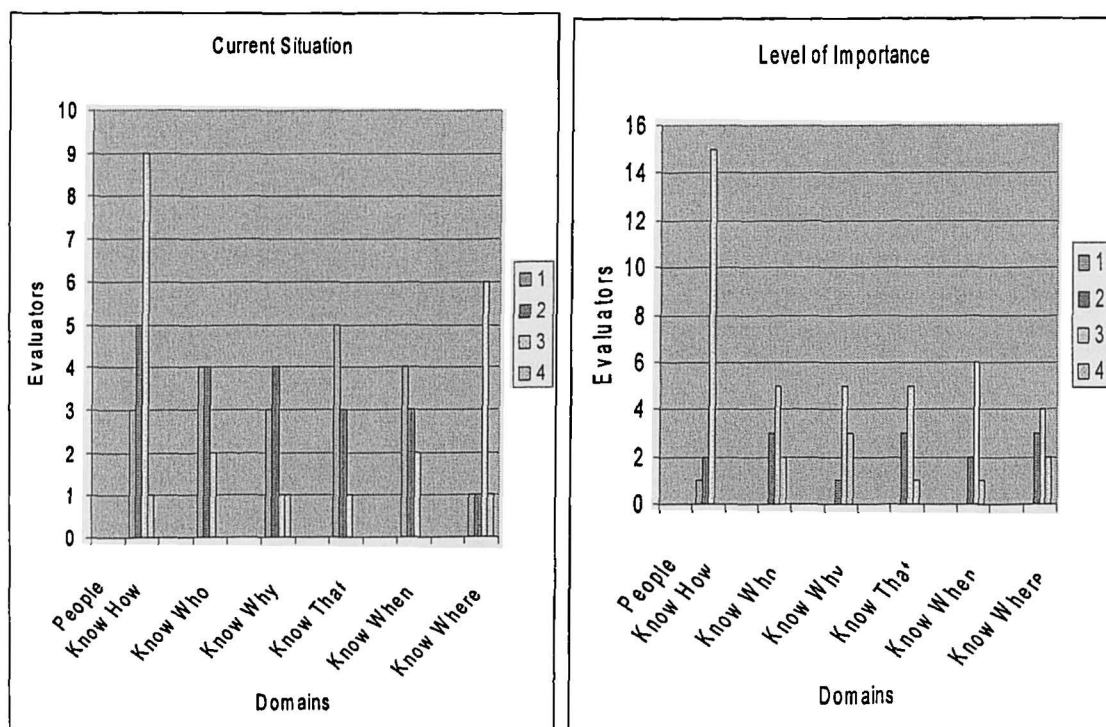
The main areas for further exploration are know where to congregate to engage in informal communication activities with 77.7% currently aware but vague and 77.7% evaluators considering this to be essential/critical to the university. Know how to engage with various informal communication activities identifies 55.5% of staff to be aware but vague/understands and 100% identifying this as essential/critical to the university.

The Elements that could be explored further to evaluate this further are:

- Networking
- Talk rooms
- Yellow pages
- Mentoring

However any communications activities would improve the informal aspect of this domain and indeed the university may have other proposals.

7.3.8 People Scores



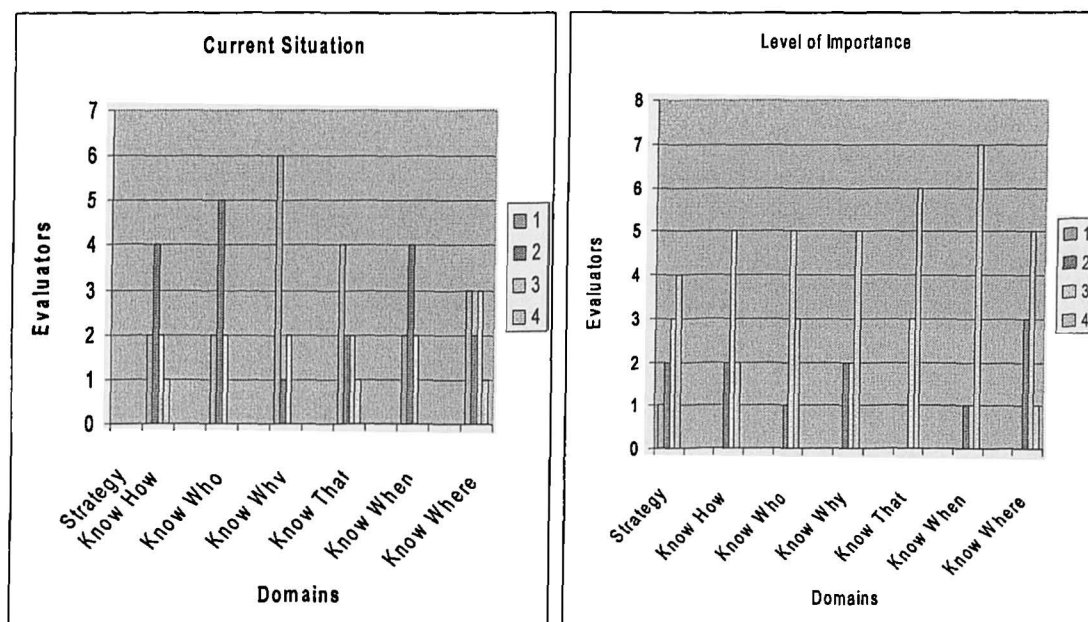
In the People Domain the overall scores show that at the current situation, 62.5% are aware but vague/understand, 37.5% at practitioner/expert level, against a level of importance with 23.4% evaluators considering this to be not important or important. 76.5% consider the People Domain to be essential/critical to the university. The main areas for further consideration relate to knowing who does what according to roles beyond job titles, with 88.8% aware but vague/understand and 77.7% of evaluators identifying this as being essential/critical to the university. A zero score was made identifying that no evaluators considered this to be not important.

In addition, know why people's roles and contributions to the organisational strategy and vision scored 77.7% in the current situation at an aware but vague/understands level, 22.2% at practitioner/expert level and 88.8% of evaluators consider this to be essential/critical to the university.

The Elements that could be explored further are:

- Feedback mechanisms
- Multiple roles/flexibility
- Expertise mapping (who knows what)
- Matrix team activities
- Job rotation communities of practice
- Roles

Figure 7.3.9 Strategy Scores

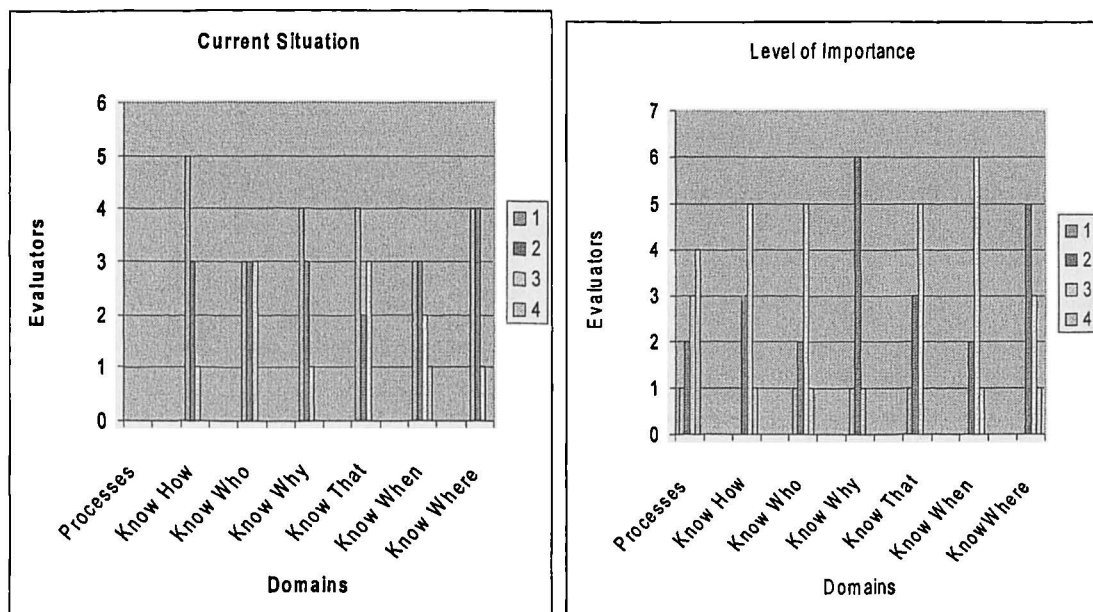


In the Strategy Domain, overall 68.5% are aware but vague/understand and 31.4% are at practitioner/expert level. A zero score is registered against not important, and 16.9% of evaluators regard this as being important. 83% consider the Strategy Domain to be essential/critical to the university. The main areas to explore further relate to the extent to which staff know why the strategy is progressing the organisation is a specific direction with 77.7% indicating no or some knowledge and 77.7% indicating this to be essential/critical. Knowing that the strategy requires cross organisational team working shows a current score of 66.6% indicating that staff do not know/have some knowledge and 100% identify this as being essential/critical to the university.

Elements that could be explored further in the strategy Domain are:

- Conversion of knowledge into measurable objectives and targets
- Evaluate review improve

Figure 7.3.10 Processes Scores



The Process Domain has emerged as the least important to the university. Evaluators indicate that 39.6% of staff are aware but vague in relation to processes, 32.7% understand and 25.8% are at practitioner level. Only 1.7% are regarded as being at expert level. In terms of level of importance 4.8% regard processes as not important, 33.8% consider processes to be important and 51.6% as essential with 9.6% as critical to the university. With regard to knowing how to use discretion and judgement to contextualise organisational processes and procedures, 88.8% of evaluators feel that staff generally are aware but vague/understands, but 66.6% identify this as essential or critical to the university. With regard to knowing why specific roles hold responsibility for identified business processes, policies or procedures 77.7% are identified as being aware but vague/understands and 77.7% regard this as being important.

The elements within the processes domain that could be explored further are:

- Central control versus devolved process
- Policies/procedures

Drawing from the foregoing test analysis, table 7.3 illustrates the evaluation matrix at the Element level, which would guide the University of Glamorgan through a more detailed and focussed evaluation using the elements identified:

Table 7.3.1 University of Glamorgan Evaluation Matrix (Elements)

	Know How	Know Who	Know Why	Know That	Know When	Know Where
<ul style="list-style-type: none"> • Commitment /Creating sense of purpose/mission statement • Critical discursive opportunities • Relationship Management • Communication 						
<ul style="list-style-type: none"> • Cyber Cafes • Communal areas • Social space 						
<ul style="list-style-type: none"> • External knowledge initiatives with - community groups, customers, other stakeholders • Global issues- language dominant country cultures • Diversification – consultancy, research & development 						
<ul style="list-style-type: none"> • Networking • Talk rooms • Yellow pages • Mentoring 						
<ul style="list-style-type: none"> • Feedback mechanisms • Multiple roles/flexibility • Expertise mapping (who knows what) • Matrix team activities • Job rotation communities of practice • Roles 						
<ul style="list-style-type: none"> • Conversion of knowledge into measurable objectives and targets • Evaluate review improve 						
<ul style="list-style-type: none"> • Central control versus devolved process • Policies/procedures 						

The matrix would repeat the process of evaluating the university in respect of these Elements with the intention of identifying the current state, and level of importance, eventually coming to a view about key areas for improvement. At this stage the application of SWOT and risk analysis could be applied to the overall university in support of decisions that the university may want to take about engaging with knowledge management.

7.4 Conclusions

This chapter emerged from research discussed previously, and focuses, in detail, on the development of a new conceptual framework. The new framework offers a holistic, critical, high-level strategic approach, in addition to more detailed operational guidance as to how to consider an organisation's readiness to engage in knowledge management, and is underpinned by theory and empirical work. This is in contrast to previously reviewed frameworks and is also different from other frameworks because it is not prescriptive, but is intended to help empower an organisation to undertake critical self evaluation at both the broad organisational level, group level, and individual level.

The framework has undergone development, critical review and improvement resultant from previous research and as a distinct and separate exercise to maintain the integrity of the work, application and testing in a university. The main emphasis of the framework is on people, which derives from the view that knowledge resides with individuals who comprise the organisation. This however is not to the exclusion of other aspects of an organisation, and the framework reflects this through the domains and elements that show the holistic and dynamic interdependency of knowledge management.

The Domains and Elements within the framework have been derived from empirical research and literature review and refined through critical reflection and reasoning, and feedback from external expertise to produce a version one and version two framework. It is recognised that the Elements may not be exhaustive, because an organisation may identify additional Elements that require consideration according to their specific

circumstances. All changes that were required as a result of feedback have been presented and the justification made clear, therefore ensuring a critically reflective and transparent process of development.

Having established the Domains and Elements, the next step was to consider in detail the approach to evaluation of the organisation. The evaluation technique was designed for critical reflection allowing for those who undertake the organisational evaluation to critically reflect during the process of evaluation and in essence the framework and approach proposed provides a guidance tool. The evaluation process draws on Skyrme and Amidon's (1997) six questions of investigation which directly explore the organisation in the context of knowledge management, and Ulrich's (1983) assessment criteria for intervention. In applying these criteria, the evaluation matrix distinguishes between what currently happens in the organisation reflecting an "is" scenario and what is considered to be important to the organisation reflecting an "ought" to happen scenario. This approach is intended to direct the organisation to identify the issues and make active choices via empowerment of critical self reflection. The organisation has the power to choose to either act or to exclude or defer the issues that are surfaced in a transparent way.

The emphasis on people remains constant and there is recognition of the need to consider roles, norms and values when undertaking a full analysis of the organisation, in addition to the idea that different levels of staff have some level of interdependence, but different perspectives. This highlighted the importance of flexibility in applying the framework and during testing, it was confirmed that this framework has the ability to achieve such flexibility.

The method of 'scoring' the organisation's readiness was kept to a simple scale of 1-4 for the current situation and 1-4 to consider the level of importance that an evaluator would place on a specific domain. By comparing scores, it was possible to expose an area that required improvement if knowledge management is to be successful. Again this approach strengthened the concept of critical self reflection and transferred ownership for

the evaluation and any required improvement or action to the organisation rather than an external evaluator prescribing to the organisation. During the course of testing it became clear that the framework is flexible enough to facilitate an organisation's focus on specific Elements only or add to the list of Elements if there was a particular problem area identified. In addition the evaluation could be conducted at an organisational, group/departmental, or individual exercise. Different levels in the hierarchy of an organisation can be the focus, whether senior management, operational management or the workforce generally.

Testing of the framework was undertaken in the University of Glamorgan in two phases using different sets of staff. The outcome of phase one identified the need for a definition of knowledge management to engender some level of understanding, and strict guidelines in completing the questionnaire to ensure that evaluators can complete the questionnaire independently. There were no major changes to the Domains and Elements and structure of the generic framework, confirming that the cycle of development and improvement, with previous critical review had reached a reasonable point of saturation. The most important criticism in phase one of testing was the desire to categorise staff to achieve a balanced evaluation of the overall organisation, rather than taking an overview, or offering a cultural feel based on perceptions. This was considered and discussed further concluding that the framework is flexible enough to accommodate such an approach, and that participation should be cross organisational and/or 360 degree to meet the requirements of organisational triangulation as well as triangulation in the context of the overall research.

Triangulation was explored further, and drawing on Denzin 1978 (in Decrop, 1999), the four methods of triangulation were reconsidered against the development, critical reflection and improvement stage as well as testing of the framework, confirming that the requirements of method, investigator and data triangulation were met. The actual full application of a 'final' framework in a university setting, would require rounded participation therefore providing a robust and holistic view of the organisation's ability to engage with knowledge management

During phase two of testing, a focus group was presented with a broad definition of knowledge management and guidelines to complete the questionnaire, which included the fundamental 'rule' to maintain an overview of the organisation rather than considering categories of staff, and in doing so it was their feel for how the university generally functions in the context of knowledge management. This testing presented no major issues or difficulties in relation to the framework and process, and challenged individuals by requesting them to think in a different way from that to which they are accustomed. Overall the focus group felt that the generic framework was robust and capable of flexing to meet specific intervention requirements in a university.

The approach to analysis of information gathered about the University of Glamorgan was straightforwardly a presentation and evaluation of results, comparing the current situation with level of importance. This was not intended to be a comprehensive analysis of the university, but to establish that the framework was useable to a relevant conclusion. This did prove to be the case, however as with many exercises of this nature and through critical reflection further improvements can be considered. This is discussed further in chapter eight.

8. SOME CRITICAL REFLECTIONS

8.1 Introduction

This chapter provides a critical review of the process and outcomes of this research and is based on the view that contributions to knowledge have been provided within this thesis, and that the proposed framework offers universities a sound basis in which to review their readiness to engage in knowledge management. These statements are contended on the following bases:

- It is claimed that the proposed framework is innovative and offers contributions to knowledge because it is a new development within the domain of knowledge management. (it is intended to help evaluate the readiness of universities to engage in knowledge management);
- provides a new application of critical systems thinking (critical systems thinking is applied to knowledge management);
- uses a new synthesis (it was developed using a synthesis of soft systems principles, knowledge management concepts, and organisational theory);
- enables organisations to consider their situations in new ways (by enabling self-critique of KM readiness);
- offers new insights into the domain of knowledge management by means of the comprehensive and substantial literature review that helped its development.

Without an evaluation of Knowledge Management Readiness (KMR) the application of knowledge management frameworks and the implementation of knowledge management remain questionable. The framework has undergone a cycle of development, pragmatic and theoretical pluralistic critique, improvement. The KMR framework has been developed from theory and practice, and it has been demonstrated that it offers improvements over existing published frameworks. These improvements will be discussed further on in this chapter, not least by applying the same method of critical review to the proposed framework as was used for reviewing other published frameworks. Exposing the developing framework to pluralistic critique has helped

improve it in demonstrable ways, notably the addition of a critical dimension to the application of the framework in practice. This has been instrumental in creating a process that helps to empower organisations to evaluate themselves critically. This is not a feature of existing published frameworks.

Despite the successes that are claimed, it is not suggested that the process and outcomes of this research are perfect. This chapter provides a critical appraisal of both. Section 8.2 revisits the Generic Review Grid that was applied to knowledge management frameworks in chapter 5. This is in preparation for section 8.3 in which the same grid is applied to the proposed KMR framework. If the KMR framework offers the contended improvement over those reviewed it should have higher scores, and the reasons for those scores should be transparent and defensible. In 8.4 it is noted that the review of frameworks highlighted certain adverse outcomes. Therefore, in addition to scoring better than existing published frameworks, the proposed framework should be able to avoid or reduce the risk of such outcomes, and it is assessed in this light. In 8.5 the use of the framework in the University of Glamorgan case (Case 2) is discussed. The conclusions to this chapter are presented in 8.6.

It shall be mentioned here that, although not part of the development and critique of the framework itself as such, a critique of the thesis was provided at a mock viva held during OR46. The viva was held by Professor Steve Clarke (Director of Research, University of Hull Business School) and Ms Barbara Cargill (Dean Swinburne University Business School). Both had received written comments on the draft thesis from Professor Miles Nicholls (Director of Research, Swinburne University Business School), and Professor Krishna Dhir (Dean, Berry College Business School). The mock viva was attended by Professor Brian Lehaney. The meeting took one hour. A summary of the outcomes and the subsequent improvements is provided in Appendix 12.

8.2 The Generic Review Grid Revisited

A significant part of the research undertaken consisted of a review of published knowledge management frameworks (chapter 5). These frameworks were reviewed

using a generic review grid (table 8.2.1, repeated from 5.2 for convenience). For purposes of credibility, consistency, and to demonstrate critical evaluation, the framework developed during this research was exposed to the same kind of critical review. The approach taken is consistent with that used in chapter 5. Criteria for evaluation were developed pluralistically and were created to offer as consistent, systematic, transparent, and credible a review as possible. Detailed discussion of the generic review grid is detailed in 5.2.

In Table 8.2.1 each individual cell is scored according to the extent to which the requirements of the cells have been met. The score key is based on a simple 1-5 scale. A score of 1 shows that the specific cell is considered to be extremely poor in regard to the criteria indicated and a score of 5 shows that the specific cell fully meets the criteria. The highest possible overall score is 100, the lowest possible overall score is 20. Section 8.3 summarises the results of the review of this framework according to the four main headings in column one of table 8.2.1.

Table 8.2.1: Generic Review Grid for Knowledge Management Frameworks
(repeated here from 5.2 for convenience)

Score Key	1 = lowest possible score 5 = highest possible score				
Total Score 100	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	<i>Has the purpose of the framework been explicitly stated?</i>	<i>Has the purpose been discussed with clarity?</i>	<i>Is there reasoning to support the purpose of the framework?</i>	<i>Is there theoretical underpinning to support the purpose of the framework?</i>	<i>Is there empirical underpinning to support the purpose of the framework?</i>
Process	<i>Is the KM process explicitly stated?</i>	<i>Has the KM process been presented with clarity?</i>	<i>Is there reasoning to support the KM process?</i>	<i>Is there theoretical underpinning to support the KM process?</i>	<i>Is there empirical underpinning to support the KM process?</i>
Activities	<i>Are KM activities explicitly stated?</i>	<i>Have the KM activities been presented with clarity?</i>	<i>Is there reasoning to support the KM activities?</i>	<i>Is there theoretical underpinning to support the KM activities?</i>	<i>Is there empirical underpinning to support the KM activities?</i>
Develop & Test	<i>Is it explicit that development and testing has been undertaken?</i>	<i>Have the methods of development and testing been presented with clarity?</i>	<i>Have the methods of development and testing been reasoned?</i>	<i>Has development and testing been theoretically underpinned?</i>	<i>Has development and testing involved empirical evidence?</i>

8.3 The Proposed KMR Framework against the Generic Review Grid

8.3.1 Purpose

This is a systemic framework intended to evaluate a university's readiness to engage with knowledge management. The purpose is explicitly stated and discussion was undertaken with reasoning and clarity based on a sound review of knowledge management literature (chapter 4) and a critical review of current knowledge management frameworks (chapter 5) and other concepts were drawn from Soft Systems Methodology (Appendix 4). The framework was exposed continually to critique and this resulted in the recognition that critical dimensions could improve implementation. This resulted in the introduction and amalgamation (for the framework) of critical systems thinking (Ulrich 1983, 2003) and Skyrme and Amidon's (1997) six questions of investigation (which are specific to knowledge management). Organisational theory, in regard to structure, strategy and culture, was related to the different aspects of knowledge management. This helped to provide understanding about the overall framework, as did empirical work undertaken through case study research in the University of Luton. From the research, a holistic critically reflective dynamic framework was created with domains and elements, ordered into layers and underpinned by a process of critical evaluation.

8.3.2 Knowledge Management Process

The knowledge management process was explicitly referred to as Domains that represent key aspects of a university. These were chosen based on empirical work, exposure to critique and theoretical underpinning derived from Soft Systems Methodology, organisational theory and practice, critical systems thinking, and knowledge management concepts. Domain one represents a requirement for commitment from senior management and management generally who have the power and position to direct the organisation, whilst bearing in mind the strategic direction, environment and culture, and structure in Domain two. Domain three refers to strategy, internal environment and external environment. Domain four focuses on the people within the organisation who have the ability to implement knowledge management or obstruct it. Domain five

includes the overall organisational business processes, which reflect the organisational infrastructure and activities which are operational. Domain five, also contains technology, as the supporting tool to facilitate the organisational information system, and communication activities. The emphasis in the framework remains on people and the rationale for this is explicitly stated and reasoned.

The framework is illustrated in such a way that the dynamics of knowledge management can be easily understood for example the horizontal and vertical interaction of each Domain, all of which encompass the whole. A process of refinement was undertaken by reviewing the structure of the framework's Domains through critical reflection and reasoning, and empirical work based on feedback from external expertise to justify the inclusion, relocation or exclusion of Domains, all of which help instil confidence and understanding about this framework.

8.3.3 Knowledge Management Activities

Knowledge management activities are referred to as Elements that support corresponding Domains. The activities (Elements) were clearly identified within the structure and represent key activities or aspects of a university that may require exploration should the need arise, thus demonstrating the flexibility of the framework in a non prescriptive way, ensuring a practical tool for guidance. These elements were justified and reasoned, and underpinned by either theory and/or empirical work. This was an iterative process undertaken through internal critical reflection and exposure to external critique. All changes made both to the Domains and Elements were discussed and summarised, therefore ensuring understanding about each aspect of this framework.

8.3.4 Development and Testing

Development of the framework was undertaken through case study research in the University of Luton, literature review of knowledge management, research into current published knowledge management frameworks, exposure to critique and testing through empirical research at the University of Glamorgan. The methodology to conduct this

research and testing was made explicit and triangulation was used to help provide credibility. A development-critique-improvement cycle involved the foregoing in addition to conference papers, presentations, focus groups, interviews, workshops, supervisor's comments, and continual critical reflection based on the foregoing.

8.3.5 Results and Conclusions

The framework has undergone development, critical review and improvement resultant from previous research and as a distinct and separate exercise to maintain the integrity of the work, application and testing in the University of Glamorgan. The results and conclusions at each stage of development and final testing of the framework demonstrated that it is relevant, valid and effective with the capability to achieve its purpose. The formal design of the overall framework and critical evaluation criteria were logically reasoned in clear and understandable ways.

A major emphasis of the framework is on people, which has been derived from the supported view that knowledge resides with individuals who comprise the organisation. This approach however was not taken to the exclusion of other aspects of an organisation, and the framework reflects this through the Domains and Elements that show the holistic and dynamic interdependency of knowledge management.

The Domains and Elements within the framework were derived from empirical research and literature review and refined through critical reflection, reasoning, and feedback from external expertise to produce version one and version two of the framework. It was recognised that the Elements may not be exhaustive, because an organisation may identify additional Elements that require consideration according to their specific circumstances. All changes that were required as a result of feedback have been presented in this thesis and the justification made clear, therefore ensuring a critically reflective and transparent process of development.

The evaluation was designed to include critical reflection and this was achieved by combining Skyrme and Amidon's (1997) six questions of investigation which directly

explore the organisation in the context of knowledge management, and Ulrich's (1983) assessment criteria for intervention.

The emphasis on people remained constant and there was recognition of the need to consider roles, norms and values when undertaking a full analysis of the organisation, in addition to the idea that different levels of staff have some level of interdependence, but different perspectives. This highlighted the importance of flexibility in applying the framework and during testing, it was confirmed that the framework has the ability to achieve such flexibility.

Testing of the framework was undertaken in the University of Glamorgan in two phases using different sets of staff. There were no major changes to the Domains and Elements and structure of the generic framework, confirming that the cycle of development and improvement, with previous critical review had reached a point that could reasonably be considered as saturation. The most important aspect that arose during testing was the desire to categorise staff to achieve a balanced evaluation of the overall organisation, rather than taking an overview or offer a cultural feel based on perceptions. This was considered and discussed further in the thesis, concluding that the framework was flexible enough to accommodate such an approach, and that participation should be cross organisational and/or 360 degree to meet the requirements of organisational triangulation.

Feedback during testing indicated that there were no major issues or difficulties in relation to the framework and process, and those who participated felt challenged to think in a different way from that to which they are accustomed. Overall feedback confirmed the generic framework was robust and capable of flexing to meet specific intervention requirements in a university.

8.3.6 Summary

Overall this is a robust framework grounded in theory and empirical research. The theoretical base is a combination of Soft Systems Methodology and Critical Systems Thinking, allied with concepts of knowledge management. Knowledge management

processes (Domains) were explicitly stated, reasoned, empirically and theoretically underpinned. Knowledge management activities (Elements) were identified as activities or issues that a university would be guided to consider when evaluating its readiness to engage with knowledge management. The author recognised that these are not prescriptive but intended as a guide which can be added to for specific organisational requirements. Development and testing was undertaken using a clear methodology. The author has produced a holistic framework that provides a logical intervention, incorporating technology, business processes, people, the environment and culture, with respectful consideration for power and politics associated with knowledge sharing. The results are presented below:

Score Key	<i>1 = lowest possible score 5 = highest possible score</i>				
Total Score 100	Explicitness	Clarity	Reasoning	Theory	Empirical Work
Purpose	5	5	5	5	5
Process	5	5	5	5	5
Activities	5	5	5	5	5
Develop & Test	5	5	5	5	5

Comparing the results of this review with the results of the review of frameworks in Chapter 5, table 8.3.1 shows the individual scores per framework, highlighting that this framework has achieved the highest score, level with Lee and Kim (2001) who used a combination of Resource Based Theory and Life Cycle Theory to underpin knowledge management and provided a well reasoned, empirically tested framework. Lee and Kim (2001) assume however that individuals within organisations will engage and commit to the concept of knowledge management. They do not consider the power and politics associated with people and knowledge sharing and offer no indication as to how this could be addressed.

Table 8.3.1: Individual Scores per Framework

	20 = lowest score 100 highest score	Purpose	Process	Activities	Develop & Test	Theory	Empirical
Abou-Zeid ES (2002)	66	17	17	17	15	4	6
Achterbergh J, Vriens D (2002)	82	23	20	22	17	17	12
Arora R (2002)	39	15	8	11	5	4	4
Balasubramanian P, Kumar N,	50	13	14	13	10	4	11
Bhatt GD (2002)	41	17	11	8	5	4	4
Binny D (2001)	39	17	12	5	5	4	7
Bolloju N, Khalifa M, Turban E	38	14	10	5	9	10	4
Bower WD, Heminger AR	45	15	13	5	12	4	10
Carneiro A (2001).	51	17	12	5	8	4	4
Connell C, Klein JH, Loebbecke C, Powell P (2001)	48	18	18	10	5	7	4
De Gooijer J (200)	48	19	12	7	10	8	10
Duru Ahanotu N (1998)	50	16	13	16	5	11	4
Escriba-Esteve A, Urra-Urbieta JA (2002)	60	20	20	5	15	13	4
Firestone JM (1999)	60	7	14	14	5	4	4
Gao F, Li M, Nakamori Y	43	13	13	12	5	10	4
Goh SC (2002)	37	16	11	5	5	6	4
Hatten KJ, Rosenthal SR	52	14	15	15	8	4	4
Hlupic V, Pouloudi A,	46	18	18	5	5	6	4
Holsapple CW, Joshi KD (2002)	92	21	22	24	25	12	20

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Hylton A (2002)	33	11	11	6	5		4	6
Jack G (2004)	100	25	25	25	25		20	20
Joshi KD (2001)	76	23	15	23	15		16	11
Kamara JM, Chimay JA,	54	18	14	12	10		4	10
Knight T, Howes T	75	20	21	15	19		5	20
Kwan M, Balasubramanian	79	21	21	16	21		4	20
Kwang KL, Pervaiz KA,	41	11	11	14	5		4	4
Lee JH, Kim YG (2001)	100	25	25	25	25		25	25
McAdam R, Reid R (2001)	47	15	12	5	15		4	4
Merali Y (2000).	47	13	15	5	14		7	9
Mullich J (2001)	20	5	5	5	5		4	4
Newman B, Conrad KW (2000)	44	15	9	15	5		4	4
Pérez Pérez M, Sánchez AM,	56	16	19	12	8		4	9
Pervaiz K, Kwang KL, Mohamed Z	34	10	9	10	5		4	4
Robertson S (2002)	30	8	6	8	8		4	7
Snowden D (@ 1998)	50	15	15	15	5		4	4
Zack MH (1999)	42	10	13	9	10		4	6

Whilst many frameworks do already exist, this review of those that are published concluded that overall existing frameworks have some or all of a number of weaknesses. These are summarised here.

Existing frameworks are:

- based on the assumption that all organisations are ready to engage in knowledge management,
- not designed or able to evaluate the readiness of an organisation to engage in knowledge management;
- purely aspirational;
- not founded in theory;
- not grounded in practice;
- unable to demonstrate empirical research in their development;
- not developed critically;
- untested;
- not reflected upon critically by their owners;
- lacking any explicit approach or content to empower participants to view their own organisation critically;
- not holistic;
- purely technically focussed;
- too prescriptive, with no explicit means to achieve adaptability to context;
- fine at a very broad strategic level but with no means to link this to operations and tactics;
- detailed to the extent that the operational/tactical level appears to be the limit of knowledge management.

As demonstrated in this research, the creation of the framework presented in this thesis involved a development-critique-improvement cycle that used both theory and practice. This cycle used literature (theories, methodologies, practices); exploratory investigations (Case 1 University of Luton); a substantial review of KM frameworks;

triangulation of critique using feedback from conference papers, presentations, focus groups, interviews, workshops, supervisor's comments; continual critical reflection based on the above and testing (University of Glamorgan – Case 2). This process helped produce a framework that is transparent, that is justified explicitly and clearly by theory and/or empirical research, and that addresses all of the issues of concern noted in the preceding bullet points. These issues and how these are addressed are discussed next.

8.4 Issues of Concern and How these are Addressed

8.4.1 Purpose

Why is this Important?

Many of the frameworks reviewed in chapter 7 appear to have no clear or explicit purpose. Without such clarity the end user is left to utilise the framework in a particular organisational setting, but may be using a tool that is totally inappropriate for the work required. Many universities may be tempted by such 'solutions' only to find that the package or methodology chosen may be inappropriate for their purpose. Time spent ascertaining the purpose first and establishing the readiness of the university to engage with the solution prior to implementation is likely to result in greater success.

How is this Addressed?

The framework outlined here has one clear and explicit purpose: to evaluate critically a university's readiness to engage in knowledge management. This purpose emerged from initial research that involved reviewing literature (theory, practice, and methodology), a pilot case, and interviews with individuals at both private and public sector organisations. Two common themes appeared in regard to new organisational ventures: 'Why are we doing this?' and 'Are we really ready to do this?' Whilst the postulated framework is designed to address the latter question it cannot do so without addressing the former. Indeed, if the answer to the former question is 'Don't know', the answer to the latter is 'No!' Knowing the answer to the first question is a necessary but not sufficient condition to obtaining a positive response to the second.

8.4.2 Readiness

Why is this Important?

The assumption that all organisations are ready to engage in knowledge management may be dangerous. It could lead to wasteful misuse of resources by addressing the wrong problems. Without considering what is really needed in the first place, staff may feel that this is yet another imposed project or fad that has nothing to do with their 'core' activities. Even with full and willing participation, failure to address the underlying issues, such as assuming that the culture is in place to engage in knowledge management, may result in problems emerging in the future.

How is this Addressed?

The Knowledge Management Readiness (KMR) framework has layers, domains, and elements, all of which are designed to help evaluate an organisation's readiness to engage in knowledge management. It does this by using a process of critical triangulation and participation, and by creating a situation in which different participants ask themselves a number of different questions about their organisation, by means of focus groups, interviews, and questionnaires. In addition, the researcher's observations add to the process of triangulation.

8.4.3 Aspirations and Theory

Why is this Important?

Frameworks that are purely aspirational offer no guidance as to how to achieve outcomes. Frameworks that do not have explicit theory bases *do* have bases in theory and these are just not made explicit – but they *do* have bases in theory. If the theory is not grasped, it is difficult to implement something with full conviction. It is also extremely difficult to address issues when things go wrong or off-track (as they invariably will) if the basis of what is being done is not understood. Thus, it may be apparent that the framework offered is not presented as an 'off the shelf' solution. It requires a skilled and

knowledgeable facilitator – in the first instance. However, it is designed to help empower, rather than to retain dependency based on expertise.

How is this Addressed?

The KMR framework makes its purpose explicit and makes explicit how it may be used. The underlying theories are spelt out and the reasons for their selection are made clear. Every aspect of the framework is justified explicitly in this way, and theory is continually linked to practice.

However, the framework draws extensively on Ulrich (1983) and Skyrme and Amidon (1997), and uses six questions of investigation based on these. In essence these are concerned with asking the right questions to identify what currently happens, and explore what ought to happen to engage successfully with knowledge management. This helps expose explicitly the contradictions in the organisation regarding the current situation versus importance, thus empowering critical self-reflection. This is discussed in more detail in the section on critical development.

8.4.4 Practice and Empirical Research

Why is this Important?

Frameworks that are based purely on theory miss the realities of application in the context of an organisation. Attempting to apply such frameworks may be troublesome at least. Interpreting what is meant in concept in the applied arena effectively means helping develop the framework. This could lead to resentment, lack of conviction, and eventually failure.

How is this Addressed?

The KMR framework addresses this by drawing on a mix of best practice, ideal practice, and empirical study, and relating these to theory. Ascertaining best practice involved using focus groups, case work, interviews, workshops, and a review of existing frameworks. Many frameworks stop at best practice, but for this framework, participants

were asked to air their thoughts on ideal practice (as well as best practice) and these have been incorporated where practicable. In other words, they were not only asked their views as to what is the best of what exists but were also asked their views as to what is important and therefore what *ought to exist*.

8.4.5 Critical Development, Testing, Critical Reflection, and Critical Empowerment

Why is this Important?

Frameworks that do not go through a development-critique-improvement cycle may be developed in a naïve and unthinking fashion and can be used to bolster predetermined views. Such self-fulfilling prophecies can arise for example when the same people that develop a framework critique it. It can be very tempting to seek solely supporting evidence rather than to seek negative evidence. Ignoring this can have serious implications for practice when a framework is found not to be robust.

An example of failure caused by taking the wrong approach is the London Ambulance case. At first considered to be a technical failure, the subsequent investigation revealed that senior management had taken the non-critical self-supporting approach that has been criticised here. In this case, not only did they not seek negative evidence to test the robustness of their proposed framework, but they also steadfastly refused to listen to any counter evidence presented to them. Only by building in explicitly a critical theme can it be possible to avoid such errors other than by pure chance. Of course a critical theme provides the means but does not guarantee implementation. In other words it is a necessary but not sufficient condition. However, if it is built in explicitly and transparently, ignoring it or its outcomes would have to be explicit and transparent, and could not be done accidentally because no one was aware that it should be done.

How is this Addressed?

The KMR framework was produced using a development-critique-improvement cycle throughout. Ideas were taken from literature (theory, practice, methodology) and empirical research, formulated as drafts, and exposed to critique in various ways. This included conference papers, presentations, focus groups, interviews, workshops, and comments from peer researchers and practitioners. Together these formed a triangulation of critique that helped create convergence of purpose and design. The framework went through numerous iterations as a result, until such point that the issues raised by the critique were addressed satisfactorily, or it became apparent that they were beyond the scope of this framework to address. For example, a valid comment was that this framework might expose weaknesses in an organisation's readiness to address knowledge management, but if senior management does not want to do anything about it nothing will happen. This framework does not purport to address that issue, and any framework must have boundaries. In fact, of those reviewed, the worst cases were frameworks that appeared to offer all solutions to all organisations in all contexts. The KMR framework provides help to empower organisations to examine themselves critically and expose such weaknesses, but it can only *help* – in itself it cannot provide solutions and it is not suggested that it can. Thus, whilst this critique is valid, it is not within the scope of this framework to address.

Once the conceptual framework was considered ready, it was tested in a 'live' setting at the University of Glamorgan. This testing had two main objectives. The first was to ensure that the framework really worked on a top-down basis and when 'drilling down' occurred from the strategic, through the operational, to the tactical levels, the framework really was applicable and robust. The second was to test if the desired balance of keeping all of the carefully developed framework concepts whilst adapting to organisational context could be achieved.

The framework was applied successfully but not without major learning occurring on the part of the facilitator. The levels of self-interest and hidden agendas on the part of respondents resulted in strong attempts to divert the exercise and discredit the framework. These attempts were only resisted because of the prior critical development that gave

strong belief in the framework's quality. In addition, whilst genuine criticism was welcome, the diversionary tactics became obvious, and hidden agendas exposed. The impression should not be given that all participants were negative, as many participated openly and freely. In some ways it might be argued that the framework was less useful in such cases. However, that may be argued about any approach, and it may be reasonably suggested that in an environment of total trust, complete co-operation, perfect communication, and 'ideal speech', a framework of any kind would be unnecessary. In an organisation that has yet to achieve such ideals, a major achievement of the framework was the confidence it instilled to help recognise diversionary and delaying tactics born out of self-interest. At the risk of repetition, this was only possible to understand and resist because of the knowledge that the framework had gone through a rigorous process of critique, and because that knowledge prepared the researcher for criticisms that had already been addressed. By coincidence, this acted as a means of corroborating triangulation in regard to critical saturation. Before the framework was applied 'live' the point had been reached where convergence of criticism was achieved and addressed. Thus, in the 'live' case no new criticisms emerged, and those criticisms that did emerge were 'empty' as they had already been addressed satisfactorily.

One major criticism that is made by the researcher, but is beyond the scope of this framework to address is that whilst a good quality framework may assist, it does not make a good quality facilitator. Both aspects are important, and whilst the framework played a major part in the case, the experience, skills, and knowledge of the researcher/facilitator played an important role. If an inexperienced researcher attempted to apply this framework the diversionary tactics may easily have succeeded. Thus, it should be reiterated that the framework is not stand-alone. It requires consultancy or facilitation in the first instance. It enables critical review and if an organisation accepts and understands the initial outcomes, they may then choose to address those by using the framework. In short, a critical framework requires *critical facilitation* or the application of the framework may not be critical in reality. This empowerment of critical reflection is built in to the KMR framework clearly, deliberately, and explicitly, rather than being left to chance.

8.4.6 Holism, Technical Focus, Prescription, Detail vs. Strategy

Why is this Important?

The issue of holism provides context from the perspective that a systemic approach helps avoid reducing problems to solvable units that really bear no relation to the overall situation being addressed. This links to the presentation of KM as being purely technically focussed. Such a focus assumes that if only the correct information technology is in place, a KM system will also be in place. It does not recognise a world that comprises human activity systems and therefore ignores political and social factors. This purely technical focus may produce IT systems that may be valuable, but without a more holistic framework to address other important issues, there is no understanding as to how such systems would be introduced or implemented in an organisation. Similarly, frameworks that focus at a purely operational level omit major aspects of introduction and implementation. Finally, frameworks that are prescriptive appear to assume that one approach will work for all organisational contexts. This is uncritical and therefore undesirable for reasons discussed previously.

How is this Addressed?

The KMR framework has a basis in strategy and operations, and KM is centred at the convergence of people, processes, technology and environment. The framework is layered so that strategy is considered explicitly and the move from strategy to operational level is also explicit. It is not possible in advance to prescribe what should happen at a tactical level. This depends on organisational contexts. It appears to be sometimes assumed that tactical is something that only occurs after strategy and operations. In implementing the KMR framework the stages are interwoven in some ways. That is because the framework is flexible and even at the strategic level allows for a variety of approaches. For example, in trying to evaluate senior management understanding and commitment, individual interviews may be used to ascertain views of the current position of the organisation's KM readiness versus the importance of KM readiness. This was the approach used in Case Two (discussed further on), but it is by no means the only approach available. The juxtaposition of current/importance can be considered by,

amongst others, focus groups, observation, and by self-administered questionnaires. Indeed, it would be advantageous to try to use as many approaches as possible, with as many levels of staff as possible, as this would create triangulation. However, the organisation will have views about what is feasible and desirable, and it will have limited resources. Thus the desire to triangulate must be tempered by the reality of the organisation's core activities – bearing in mind that the process of critical reflection has yet to start. One aspect that is key is the consideration of current situation of KM readiness versus its importance. If an organisation will not engage in this exercise in any form whatsoever, then there is no point in taking the exercise further. The KMR framework is useful for those who want to examine their own organisation critically, but it starts with the initial premise that without senior management commitment being demonstrated (rather than just stated) there are probably ulterior motives for a firm engaging in this evaluation. One way that such commitment can be demonstrated in the initial phases is by showing that the issue of KM readiness is taken seriously and by participating fully in the current/importance evaluation.

8.5 Critique of the Application of the Generic Review Grid to Case 2

8.5.1 The Framework Applied

Once the KMR conceptual framework had been developed as fully as reasonably possible (saturation), it was applied to a testing case, and exposed to challenge and critique once more, but this time from a different perspective. By this stage the framework had undergone critical pluralistic review from both theoretical and applied bases. The conceptual framework was in accord with critical systems thinking and it incorporated some major KM concepts. The evaluation process was developed with a clear knowledge management investigative procedure based on Skyrme and Amidon's (1993) six questions of investigation, and allied to Ulrich's (1983) assessment criteria for intervention. In undertaking the research much was drawn from Denzin (1978) in regard to triangulation.

Case Two, its process, and its outcomes have been discussed extensively previously, so only a summary will be provided here. Case Two was undertaken at the University of Glamorgan, which had stated a significant interest in knowledge management. A first challenge for the university was that the senior management's understanding of KM was very much as a computer system rather than knowledge management. They were surprised at KM being presented as a more encompassing domain. The strength of the knowledge that the framework had this, and with hidden agendas and diversionary tactics, these were easily exposed because the framework was robust and not easily open to challenge. For example, when some participants failed to challenge the framework itself, they attempted to divert the purpose (to evaluate the organisation's readiness for KM). The diversions usually involved personalities or inter-departmental (or even intra-departmental) tensions. It also became apparent that some participants may want try to focus on existing structures and categories, and may, for example, find it difficult or unsuited to their agendas to discuss issues generally without categorising staff by status and role.

The foregoing alone suggests that the organisation needs to consider some major issues before engaging in knowledge management. It may of course be argued that the exercise of airing and addressing the issues may itself be one of knowledge management, and that will not be disputed here. However, in order to do that, the iterative process has to begin somewhere, and the KMR framework acts as an enabler for that. The case resulted in some adaptation to the framework's process to suit the organisational context, but no change to the overall generic KMR framework was needed. This helped to support the view that saturation had been reached.

Whilst the framework is capable of adapting without altering the generic structure, the previous discussion raises the issue of the capability and style of the investigator/facilitator, and how much this influences the investigation. Both Soft Systems Methodology and critical systems thinking fail to address this issue in any depth, but it would be very naïve to suggest that the KMR framework could be applied by any person in any context. It requires a skilled facilitator and it requires some understanding of its bases. This may make it appear weaker than frameworks that are claimed to be

applicable by non-experts in a variety of contexts, but the value of such claims is open to question.

During the application of the framework at the University of Glamorgan, despite the issues of concern mentioned, and provided that participants engaged, the framework forced critical self-reflection. This raises a further criticism in that the framework, being reliant on practice that considers knowledge management to be within the human activity system tradition, can be undertaken without such engagement. Indeed, similar criticism can be levied at any methodology that relies on debate. The politics and power issues surrounding this are beyond the scope of this thesis, but nevertheless are areas of interest for future research.

Overall, it is contended that the application of the KMR framework to Case two was successful, and justified the view that saturation had been reached and that little more could be gained from further testing. The Case Two scores indicated that improvements could be made at the University of Glamorgan in relation to Knowledge Management Readiness, and the framework helped highlight graphically the juxtaposition of the current situation against the importance of knowledge management to the university. Overall the framework worked very well and was flexible enough to meet a new context (University of Glamorgan had not been used in development).

8.6 Conclusions

This chapter provided a critical review of the process and outcomes of this research, highlighting why a new knowledge management framework is needed, followed by discussion of major areas of weakness found in the review of knowledge management frameworks, and how this framework addresses them. The new framework for knowledge management readiness underwent a development, critique and improvement cycle resulting in a robust framework grounded in theory and empirical research. The theoretical base is a combination of Soft Systems Methodology and Critical Systems Thinking, allied with concepts of knowledge.

The review of published knowledge management frameworks (chapter 5) provided a significant part of the research undertaken, and this was conducted using a generic review grid. The same approach and grid was used to review the framework for knowledge management readiness showing a score of 100, the highest score that can be achieved.

Only one other framework reviewed scored similarly, however this framework had a weakness in that they assumed that individuals within organisations would engage and commit to the concept of knowledge management, without considering the power and politics associated with people and knowledge sharing and offered no indication as to how this could be addressed. Nor did their framework have any element that would consider the readiness of an organisation to engage with the concept of knowledge management. In contrast, this framework explicitly considered such issues. In addition several other important issues were considered with discussion and reasoning as to their importance and how this framework addresses these issues, providing contributions to knowledge. The issues that arose are: purpose; readiness; aspirations and theory; practice and empirical research; critical development, testing, reflection and empowerment; holism, technical focus, prescription, detail vs. strategy; and application.

With regard to purpose, many of the frameworks reviewed in chapter 5 appeared to have no clear or explicit purpose and without such clarity there is confusion. The framework for KMR has one clear and explicit purpose: to evaluate critically a university's readiness to engage in knowledge management and this was underpinned by research that involved reviewing literature (theory, practice, and methodology), a pilot case, and interviews with individuals at both private and public sector organisations.

Readiness was considered as important because the assumption appeared to be that all organisations are ready to engage in knowledge management, which can lead to wasteful misuse of resources and emerging problems in the future. The KMR framework is designed and structured to help evaluate an organisation's readiness to engage in knowledge management, using a process of critical triangulation and participation. Again this is underpinned by theory and empirical research and testing.

Aspirations and theory is important because frameworks that are purely aspirational offer no guidance as to how to achieve outcomes. Frameworks that do not have explicit theory bases *do* have bases in theory and these are just not made explicit – but they *do* have bases in theory. If the theory is not recognised and understood, it is difficult to implement something with full conviction. The underlying theories for the KMR framework were spelt out and the reasons for their selection were made clear. Every aspect of the framework was justified explicitly in this way, and theory was continually linked to practice.

With regard to practice and empirical research, frameworks that are based purely on theory are weak in reality and interpreting what is meant in concept in the applied arena effectively means helping develop the framework. The KMR framework drew on a mix of best practice, ideal practice, and empirical study, and these were related to theory. Ascertaining best practice involved using focus groups, case work, interviews, workshops, and a review of existing frameworks.

Critical development, testing, critical reflection, and critical empowerment provide perhaps the greatest contribution to knowledge. Frameworks that do not go through a development-critique-improvement cycle have not engaged with robust critical reflection, which should be negative as well as positive. It is important to seek negative evidence to test the robustness of a proposed framework in an explicit and transparent way. The KMR framework was produced using a development-critique-improvement cycle throughout, in a multi-methodological manner which formed a triangulation of critique that helped create convergence of purpose, design and boundaries. Boundaries included, for example management commitment, or action to undertake a particular recommendation. This framework is intended to help expose weaknesses for consideration and understanding, it is not intended to provide answers. In order to expose weaknesses and achieve a level of accountability within the organisation, a critical element to evaluation was applied using knowledge management investigative questions. This approach however still does not result in answers about action and senior management commitment. Whilst this critique is reasonable and valid, it is not within the scope of this research to find the solution.

Once the conceptual framework was considered ready, it was tested in a 'live' setting at the University of Glamorgan. The framework was applied successfully and resulted in further learning on the part of the facilitator. The learning experienced related directly to organisational behaviour and attitude based on self-interest and hidden agendas on the part of respondents. These attempts were exposed and resisted because of the prior critical development that gave strong belief in the framework's quality. Before the framework was applied 'live' the point had been reached where convergence of criticism was achieved and addressed. Thus, in the 'live' case no new criticisms emerged, and those criticisms that did emerge were 'empty' as they had already been addressed satisfactorily.

One major criticism that is made by the researcher, but is beyond the scope of this framework to address is that whilst a good quality framework may assist, it does not make a good quality facilitator. Both aspects are important, and whilst the framework played a major part in the case, the experience, skills, and knowledge of the researcher/facilitator played an important role. If an inexperienced researcher attempted to apply this framework the diversionary tactics may easily have succeeded. This confirmed that the framework is not stand-alone but requires critical facilitation in the first instance, whilst maintaining the holistic non-prescriptive approach.

Holism, technical focus, prescription, detail vs. strategy provides context from the perspective that a systemic approach helps avoid reducing problems to solvable units that really bear no relation to the overall situation being addressed. The KMR framework has a basis in strategy and operations, and KM is centred at the convergence of people, processes, technology and environment. The framework is layered and interlinked so that strategy is considered explicitly and the move from strategy to operational level is also explicit. The holistic approach is as much about consideration of all aspects of the organisation as it is about full participation through focus groups, observation, and by self-administered questionnaires with as many levels of staff as possible, as this would create triangulation. However, this must be tempered with the organisation's view about what is feasible and desirable, and it will have limited resources.

In applying the framework, time did appear to be an issue, though overall feedback indicated that it was considered robust and capable of flexing to meet specific intervention requirements in this and similar organisations. As indicated the framework was robust and not easily open to challenge. The types of challenges to emerge indicated tensions that in themselves would be issues for the university to address before engaging with knowledge management and the KMR framework would act as an enabler to initiate progression in this respect.

In addition to the foregoing, the mock viva held at OR46 (see Appendix 12) was of major help in improving the thesis and formed part of the critique process.

9. CONCLUSIONS

9.1 Summary

In the foregoing chapters it has been argued that contributions to knowledge have arisen from the research presented in this thesis, and that the 'final framework' offers universities a sound basis on which to review their readiness to engage in knowledge management. The term 'final framework' is used here to indicate that the status of the framework and the associated research are considered sufficient to demonstrate contributions to knowledge. It is not suggested that no further research could be conducted or that the framework could not be improved. It is 'final' in the sense that it is believed fit for purpose in regard to this thesis.

In the previous chapter it was claimed that the proposed framework is innovative and offers contributions to knowledge because it:

- is a new development within the domain of knowledge management (it is intended to help evaluate the readiness of universities to engage in knowledge management). Research demonstrated that whilst there are frameworks that can support the implementation of knowledge management, there are none that will assist universities in evaluating their current state of readiness to engage with the concept. This framework offers guidance to assist universities in such an evaluation;
- provides a new application of critical systems thinking (critical systems thinking is applied to knowledge management). Through a comprehensive review of knowledge management frameworks, it was established that many are descriptive and/or prescriptive and not underpinned by theory. This framework uses critical systems thinking to underpin and guide the process of self evaluation;
- uses a new synthesis (it was developed using a synthesis of soft systems principles, knowledge management concepts, and organisational theory). This framework provides a holistic approach, drawing on and cross referencing theory relevant to underpinning the dynamism of organisational knowledge management ;

- enables organisations to consider their situations in new ways (by enabling self-critique of KM readiness). In the process of self evaluation, evaluators must consider what currently happens, which is considered against what they view as important to the organisation rather than personal agendas, therefore guiding participants to consider their situations in a holistic manner;
- offers new insights into the domain of knowledge management by means of the comprehensive and substantial literature review that helped its development. This was achieved through reasoned discussion and consideration of knowledge management literature generally, and a comprehensive review of knowledge management frameworks.

The process and outcomes of the research were considered critically in the previous chapter. The research was undertaken using pluralistic critique throughout. The proposed knowledge management readiness (KMR) framework was created by means of a development-critique-improvement cycle that is grounded in theory and empirical research. Soft Systems Methodology, critical systems thinking, and organisational theory have been allied with knowledge management concepts to produce the KMR framework.

The same approach and grid that was used to produce the review of published knowledge management frameworks in chapter 5 was used to review the proposed KMR framework. The latter scored highly and the scores are reasoned and defensible. The developed conceptual framework was successfully applied at the University of Glamorgan.

In undertaking the research it became clear that there is no single definition of knowledge management or what constitutes a knowledge management framework. The following working definition of knowledge management was derived from theory, practice and reasoning and provided the context within which this research was undertaken:

Knowledge management refers to the systematic organisation, planning, scheduling, monitoring, and deployment of people, processes, technology, and environment, with appropriate targets and feedback mechanisms, under the control of a public or

private sector concern, and undertaken by such a concern, to facilitate explicitly and specifically the creation, retention, sharing, identification, acquisition, utilisation, and measurement of information and new ideas, in order to achieve strategic aims, such as improved competitiveness or improved performance, subject to financial, legal, resource, political, technical, cultural, and societal constraints.

Although complex, this definition reflects the dynamism of organisational knowledge management, maintaining the concept at a broad organisational level, both strategic and operational. Further, this research demonstrated that there are many concepts that are common to multiple frameworks but the structure of the frameworks varies. Given that knowledge management frameworks are so variable, too focussed, prescriptive, not tested or underpinned by relevant theory, it is important that a framework specifically designed to evaluate the KMR of an organisation has been developed. Such a framework could be generic, but the final framework that one organisation may use in applying knowledge management may differ from another because cultures procedures and practices etc are different.

9.2 Achieving the Aim and Objectives

9.2.1 Aim

The aim of this research was:

to develop a useful framework, based on theory and practice, which is designed to help evaluate a university's readiness to engage with knowledge management in a holistic way, and which would provide useable decision-making inputs that are understandable to managers.

The previous section has argued (in effect) that this aim has been achieved. The following discussion concerns the achievement of the objectives.

9.2.2 Objectives

Provide a critical review of the knowledge management literature.

A comprehensive review of the knowledge management literature has been provided in Chapter 4. Chapter 4 explored various aspects of knowledge management, establishing that business success, the new era of organisational forms and the continual changing environment require new approaches to management. Knowledge management has been argued to be essential to capture and maximise the knowledge and expertise that provides an organisation with competitive edge.

Communication is regarded as key to knowledge management and whilst improving technologies provide opportunities for increasing information exchange, much organisational knowledge is tacit, and can not so easily be transferred electronically. This research therefore focused heavily on the human dimension, placing electronic information exchange in the position of facilitative tool and placing more emphasis on the dialectic and critical process. The critical discursive process distinguishes information exchange from knowledge sharing because the emphasis shifts from non-action to learning, understanding and consideration of variable solutions, which can impact horizontally and vertically throughout the organisation and require competent management of interrelationships.

The relationship between managing knowledge and people was recognised and discussed because knowledge is still associated with power, money and organisational politics. Management challenges, therefore, are changing in relation to teamwork, organisational structure, communication and collaboration and ability of the organisation to learn. This research explored the foregoing issues further from a holistic critical perspective.

The literature review in chapter 4, however, did not indicate any holistic underpinning theory as such and did not recognise the need for knowledge management to be treated as a strategic issue. Appendix 3 therefore explored the development of management in relation to theory and issues that should be considered in relation to knowledge management. Strategic approaches to organisational management and

structures were discussed. One significant observation was the connection between structure and management approaches that influence the culture of organisations and can either make for a viable environment for effective knowledge management or result in obstructions, but solutions can be found to such obstructions through the generation of an appropriate culture and management approach.

It was established that the initial design and development of organisational structures is based around functionality and a role culture, whether it is stringently centralised or loosely devolved. Although it appears that structures are diminishing at a time of increasing technology and virtual working, the overall management and control issues remain constant. Whilst this is relevant from a generic perspective, it was recognised that universities have been considered to be different from other organisations, public and private sector, being described as loosely coupled systems (appendix 3). They serve customers who insist on involvement in the decision-making processes (e.g. the student community) and comprise professional employees who demand a large measure of control over institutional decision processes (e.g. independent thinkers such as the academic community).

Universities also remain vulnerable to external political, economic, and demographic pressures that make internal decision making difficult, but they are equally vulnerable to external Governmental demands that drive institutions toward greater accountability, monitoring, control and value for money. Given this discussion, it was important to develop a framework with due regard and understanding of general structures, cultures, and management that can evaluate the readiness to undertake knowledge management of a university that is progressively moving toward a more centrally controlled purposeful organisation form. The point was emphasised that in an increasingly competitive environment that is resource poor, loosely coupled organisational forms are luxuries that universities can ill afford because of the likely wasted resources.

Discussion and reasoning continued concluding that the attitude of managers in addition to an explicit awareness and understanding of the culture and structure helps to consider the evaluation of an organisation's readiness to engage with the concept of knowledge management, specifically the need to shift toward more strategic

management thinking linked to operational, and to include personal experiences and learning, organisational, social, behavioural and cultural influences, within the scope of human resource management, as well as the relevant business processes and technological tools to facilitate it.

Discussion continued leading to a systems perspective of the organisation, which demonstrated that whatever the approach or structure, ultimately an organisation is a system which brings large or smaller groups of people together to achieve a common goal. The systems perspective also underpins the need to consider current changes in organisations as different sectors move toward disparate or virtual working environments as indicated, and collaborative knowledge based services rather than products. The appropriateness and benefits of using Soft Systems Methodology (SSM) to explore and develop a framework was confirmed.

Evaluate management practices in relation to knowledge management within a case organisation.

This was achieved and chapter 3 presented the initial case study based on the University of Luton. This initial phase of research provided understanding about a university's key issues and challenges that would need to be considered if the university were to consider developing an approach to knowledge management. The main issues to emerge related primarily to organisational communication, interaction and relationships with management, participation in decision-making, empowerment, training and development, change management, motivation and innovation. Communication emerged consistently throughout the research and communication is core to the success of knowledge management. This highlighted the need for improved communication systems and technology which needed to be implemented in a balanced way.

The university was striving for improvement and had positive intentions to address the university's culture to generate cross-organisational interaction, knowledge sharing and working practices. It was clear that although there was an interest in knowledge management, for example through the appointment of a cross organisational facilitator and developer, and there were organisational issues that

needed to be addressed before reasonable engagement with knowledge management could be achieved. These included interrelations between staff and management, internal and external partnerships with other universities, employers, funding and professional bodies and community organisations. Within the area of interrelations were value and recognition, motivation, feedback on performance, empowerment and authority, participation in decision making and consultation. Over all, staff in the University of Luton cited a creative and dynamic environment as being one they would prefer to work within.

Review current knowledge management frameworks and develop knowledge management best practice criteria

This was achieved and chapter 5 provided a comprehensive review of published knowledge management frameworks intended to offer methods and approaches for the implementation of knowledge management, or aspects of it, such as knowledge creation, or knowledge sharing. The results of this review demonstrated that despite the need to consider people, culture, and associated aspects of the organisation, the majority of publications and products are still focussed on technology and hard based information systems. Few frameworks considered a holistic, strategic approach to knowledge management and of those that were relevant, a nominal amount considered the readiness of an organisation, making assumptions about staff's willingness and ability to engage. The results also revealed major weaknesses in theoretical underpinning and empirical work, making the majority of the published frameworks aspirational and inadequate to the needs of practitioners. As a consequence the frameworks did not adequately consider all aspects to effectively implement knowledge management in a sustainable way.

The review of frameworks confirmed again the need to develop a framework that is based both in theory and practice and considered the management and human capability as a significant element in the knowledge management process. The kind of framework produced here is at a strategic level.

Establish a theoretical and practical foundation on which a framework for evaluating the readiness of a higher education institution to engage with knowledge management can be based.

This was achieved and in doing so, addressed the main criticisms of previous frameworks, i.e. the lack of empirical and theoretical underpinning. This conceptual framework is underpinned by theory, empirical work, critical reflection and reasoning undertaken throughout the research and demonstrates a significant contribution to knowledge. Empirical work derived from case study research undertaken in the University of Luton and exposure to critique through seminars, conferences, peer review and discussion, and separate independent testing with practitioners. Theory is referred to in various contexts resulting in a pluralistic theoretical underpinning based on management theory, structure, culture, learning theory, communication, critical thinking and Soft Systems Methodology.

Soft Systems Methodology (SSM) demonstrated the depth of theoretical and methodological underpinning that a knowledge management framework can gain from SSM in terms of development. The research focused on human situations in a university in the context of knowledge management and as such was faced with social complexity, ill structured and strategic problem situations, therefore requiring a logical approach to the investigation and intervention by way of a framework to evaluate a university's readiness to engage with knowledge management.

Emphasis was placed on the analyst to ensure appropriate participation and maintain the ethos of SSM, which could have been viewed as a weakness, because it reduces the level of independence that a final framework may offer to the practitioner, however, this is a surmountable challenge that requires critical facilitation training.

The principles of SSM were useful to recognise the complexity of social systems including the challenge of the participant investigator to focus on outcomes based on learning to improve, holistic systems thinking, relationship handling and an action research paradigm. The holistic systems thinking identifies the component parts that may be meaningful to one level of a hierarchical system, but combined, they contribute to the overall system and the dynamics within. In this sense the adaptation

of SSM to underpin a framework for critical evaluation of a university provided robustness. This was very relevant in relation to the potential for many influencing variables drawn from the initial case work in the University of Luton and review of knowledge management literature. From this discussion, it was possible to establish a potential structure for a knowledge management framework. However as the framework underwent the development – critique – improvement cycle, it was recognised that Soft Systems Methodology is not critical but based on consensus and compromise rather than radical improvement or change. The critical dimension was applied by the author during development. To critically evaluate an organisation, a knowledge based evaluation matrix was introduced in chapter 6, but the evaluation matrix was limited to the extent that it would only guide the actual questions to be asked in the context of knowledge management, and not necessarily evaluate the organisation's readiness from a robust critical perspective.

Further discussion on critical research in this context concluded that the critical element was essential both to distinguish this research from other work, in that the framework is non-prescriptive and the critical discursive process is what distinguishes information exchange from knowledge sharing because the emphasis shifts from non-action or simple problem solving to a position of learning. All of this needed to be considered within the scope of power and politics in the organisation, not necessarily to establish a situation of equality and emancipation as this is unsustainable, if ever achievable, but to provide opportunities for broad discourse situations based on critical awareness and reflection with the recognition of power bases and influences. The result of this reasoning was in keeping with the systems paradigm, the framework and process of evaluation remained underpinned by SSM, and reflected a social planning approach in an organisational context. But extending this and drawing on critical systems thinking, the evaluation technique was designed for critical reflection allowing for those who would be undertaking an organisational evaluation to critically reflect during the process of evaluation and in essence the framework and approach provided a tool to guide this process.

In applying this process for critical reflection, chapter 6 provides discussion and reasoning in the development of the evaluation matrix. This was based on the need to be able to ask the right questions to identify what currently happens, and explore with

the organisation what ought to happen to engage successfully with knowledge management, whilst bearing in mind the need for appropriate participation. However, it was felt that just using an “ought to” happen question did not push individuals to think organisationally, so the “ought to” question formed the basis of what was considered important to the organisation. In applying this criterion, therefore the distinction between what currently happens in the organisation reflected the “is” scenario and what was considered to be important to the organisation reflected the “ought” to happen.

By guiding the organisation to question what happened assisted in the explicit recognition of current “knowledge management” practices, and by juxtaposing the difference between where the organisation is on to what they consider to be important identified what needed to be explored further.

Evaluate and revise the conceptual model

This was achieved throughout using a development – critique – improvement cycle. Chapter 6 however, brought together previous research and learning, and focused specifically on the conceptual framework version one, which included the approach to evaluation. All changes to the framework were identified and incorporated into a revised framework version two, with 23 changes made in total. The revised framework version two was presented, with full justification for the inclusion of all elements, all of which were theoretically and/or empirically underpinned. The importance of critical reflection in preparation for application was emphasised and the evaluation technique was designed for critical reflection.

Utilise the revised model in a higher education institution.

This was achieved and chapter 7 discussed the application and testing of the framework in the University of Glamorgan. Application and testing were undertaken as a separate and independent exercise from the development phase to maintain the integrity of the work by ensuring that those testing did not feel ownership of an initiative they were also involved in developing, thus attempting to achieve as much objectivity as possible. Two key objectives were met and these were to:

1. Identify any improvements to the generic framework and evaluation matrix
2. Identify changes that might be made in the application of the matrix specific to the University of Glamorgan.

The approach taken was twofold, with a stage one and stage two test. The outcome of stage one resulted in minimal changes to the generic framework, with greater emphasis on specific changes appropriate to the university, highlighting that this test coupled with previous critical review had reached a reasonable point of saturation.

Stage two was embarked upon with a focus group comprising Senior Management, Corporate and APT&C staff, none of whom were involved in step one. The focus group did not experience any difficulties in completing the questionnaire from a process perspective, and commented on the challenges in completing such a questionnaire in the context of having to think differently. This was an important observation as it reflected the learning that had begun about knowledge management at this early stage of intervention.

Overall the testing demonstrated that the framework and process to enable the application of the framework for critical self evaluation was robust from a theoretical and empirical perspective meeting the requirements of this intervention for knowledge management. The framework was then exposed to critical reflection and critique using the Generic Management Review Grid which helped to confirm the contribution to the area of knowledge management this framework provides. For example, with regard to current knowledge management frameworks, a comprehensive critique confirmed the need for robust theoretical and empirical underpinning in addition to a framework that is flexible enough to meet the diverse needs of organisations, whilst maintaining a sound structure and robustness in itself. This framework achieves this.

The review of knowledge management frameworks demonstrated a prescriptive and focussed approach, whereas this framework is based on the organisation identifying for itself what the current situation is and what they regard as being important, therefore it is neither prescriptive nor focussed and provides for a holistic strategic approach that has regard for the operational aspect of organisations encompassing the

various aspects of knowledge management that are interdependent dynamic and systemic.

Few frameworks demonstrated that testing to justify the proposed advantages of what was being presented was undertaken. This framework has been tested and whilst it can be improved upon, shows that it is useable and understandable for the practitioner.

9.3 Further Research

The research undertaken provides a number of further research possibilities. Some major ones are as follows.

- Are power and politics surmountable when trying to motivate and manage staff to share knowledge?
- Is senior management really interested in knowledge management (KM) or in being seen to be interested in KM?
- Are organisations sufficiently interested in strategy and the long term to address issues raised by employing this framework, or does a short-term view prevail?
- How can firms address issues highlighted by the KMR framework especially those requiring cultural change?
- In an environment where KM is 'sold' as a quick fix that can be achieved through a technology-based solution, how can senior managers be convinced that a human activity approach could be beneficial?
- How can the issue of the skills of the facilitator be addressed in a systems-based investigation and concomitantly paradigm commensurability be maintained, and does this matter?

9.4 Conclusions

It is contended that this thesis provides contributions to knowledge, that the research has limitations, and that there are a number of areas of further research that might be addressed. All of these have been discussed in this chapter and the preceding ones,

and the claims for the research outcomes are defensible and supported in this thesis. The critical reflections recognise weaknesses and limitations, but whilst it is important to recognise these, it is argued that this recognition strengthens rather than weakens the claims for this research.

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